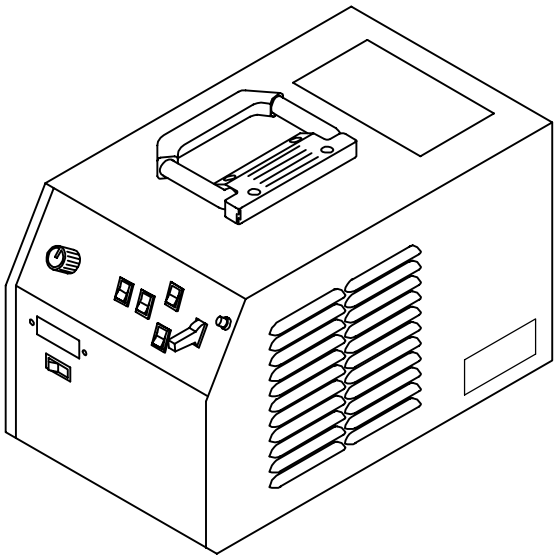
Miller®

June 1993 Form: OM-206C

Effective With Serial No. KD375312

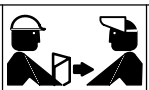
OWNER'S MANUAL



Maxstar® 152 And 175

- CC/DC Welding Power Source
- For GTAW And SMAW Welding
- 120 A At 25 V Or 140 A At 25.6 V, 100% Duty Cycle
- 152 Model: Single-Phase; 175 Model: Three-Phase Input Power
- Thermostat Protection Against Overheating
- Touch Start For GTAW Welding
- 14-Pin Remote Control Receptacle

- Read and follow these instructions and all safety blocks carefully.
- Have only trained and qualified persons install, operate, or service this unit.
- Call your distributor if you do not understand the directions.



- Give this manual to the operator.

- For help, call your distributor
- or: MILLER ELECTRIC Mfg. Co., P.O. Box 1079, Appleton, WI 54912 414-734-9821

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From Miller to You

Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

ISO 9001 REGISTERED QUALITY SYSTEM

Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog orindividual catalog sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**

TRUE BLUE® WARRANTY

Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.

Miller offers a Technical Manual which provides more detailed service and parts information for your unit. To obtain a Technical Manual, contact your local distributor. Your distributor can also supply you with Welding Process Manuals such as SMAW, GTAW, GMAW, and GMAW-P.

Miller® *The Power of Blue.*

EMF INFORMATION

NOTE ☞ *Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields*

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): ". . . there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

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SECTION 1 – SAFETY INFORMATION

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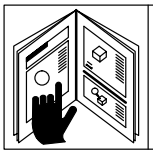
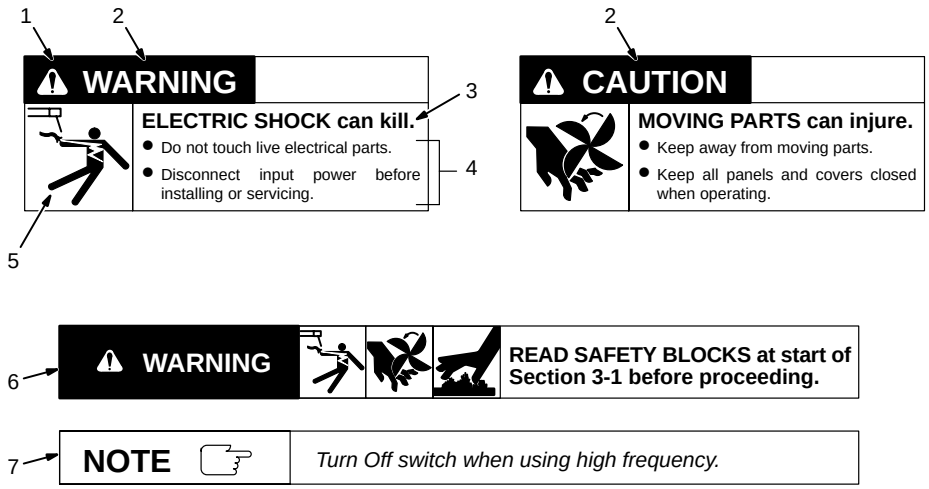


- Read all safety messages throughout this manual.
- Obey all safety messages to avoid injury.
- Learn the meaning of WARNING and CAUTION.



1 Safety Alert Symbol

2 Signal Word

WARNING means possible death or serious injury can happen.

CAUTION means possible minor injury or equipment damage can happen.

3 Statement Of Hazard And Result

4 Safety Instructions To Avoid Hazard

5 Hazard Symbol (If Available)

6 Safety Banner

Read safety blocks for each symbol shown.

7 NOTE

Special instructions for best operation – not related to safety.

Figure 1-1. Safety Information

SECTION 2 – SPECIFICATIONS

NOTE *Unless otherwise noted, the 175 model is shown throughout this manual.*

Table 2-1. Welding Power Source

Specification	Description	
Type Of Output	Constant Current (CC), Direct Current (DC)	
Welding Process	Gas Tungsten Arc (GTAW), Shielded Metal Arc (SMAW) Welding	
Options	See Rear Cover	
	152 Models	**175 Models**
Rated Weld Output	120 Amperes, 25 Volts DC At 100% Duty Cycle (See Section 2-2)	140 Amperes, 26.5 Volts DC At 100% Duty Cycle (See Section 2-2)
Type Of Input Power	230 Volts AC; 50/60 Hz; Single Phase	460 Volts AC; 50/60 Hz; Three-Phase
Input Amperes At Rated Output	25 A	12.5 A
KVA/KW Used At Rated Output	5.85 kVA/3.8 kW	9.56 kVA/5.26 kW
Amperage Range	1-150 A	1-175 A
Max. Open-Circuit Voltage	95 Volts DC	95 Volts DC
Overall Dimensions	Length: 16-1/2 in (419 mm); Width: 9-1/2 in (241 mm); Height: 8 in (203 mm)	Length: 16-1/2 in (419 mm); Width: 9-1/2 in (241 mm); Height: 10 in (254 mm)
Weight	Net: 31 lb (14 kg); Ship: 36 lb (16 kg)	Net: 39 lb (18 kg); Ship: 42 lb (19 kg)

2-1. Volt-Ampere Curves

The volt-ampere curves show the minimum and maximum voltage and amperage output capabilities of the welding power source. Curves of other settings fall between the curves shown.

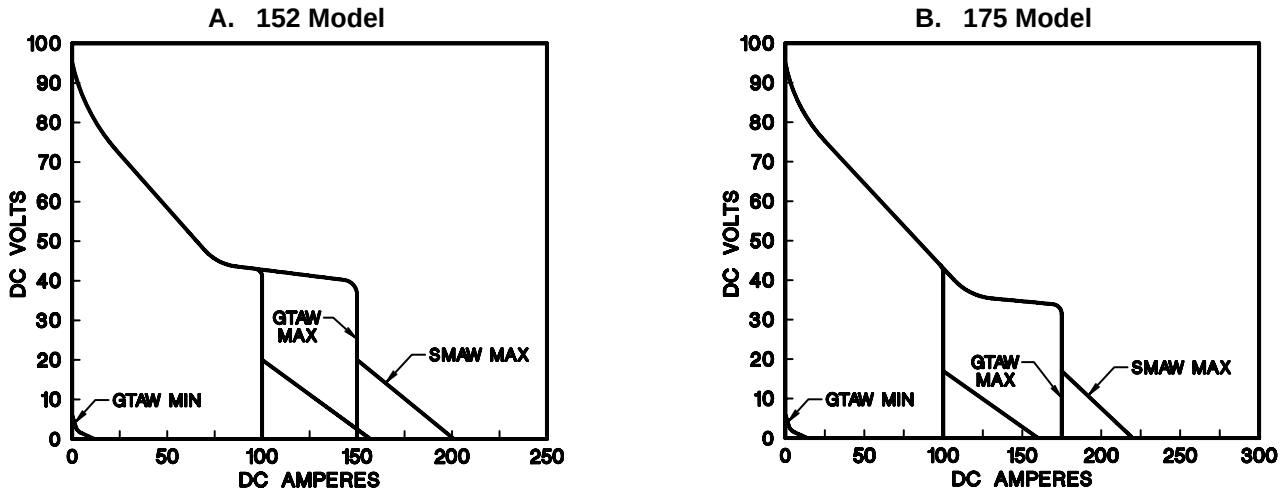


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Figure 2-1. Volt-Ampere Curves

2-2. Duty Cycle

⚠ CAUTION

EXCEEDING DUTY CYCLE RATINGS will damage unit.

- Do not exceed indicated duty cycles.

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Duty cycle is how long the unit can operate within a ten minute period without causing overheating or damage.

This unit is rated at 100% duty cycle allowing continuous operation at rated load.

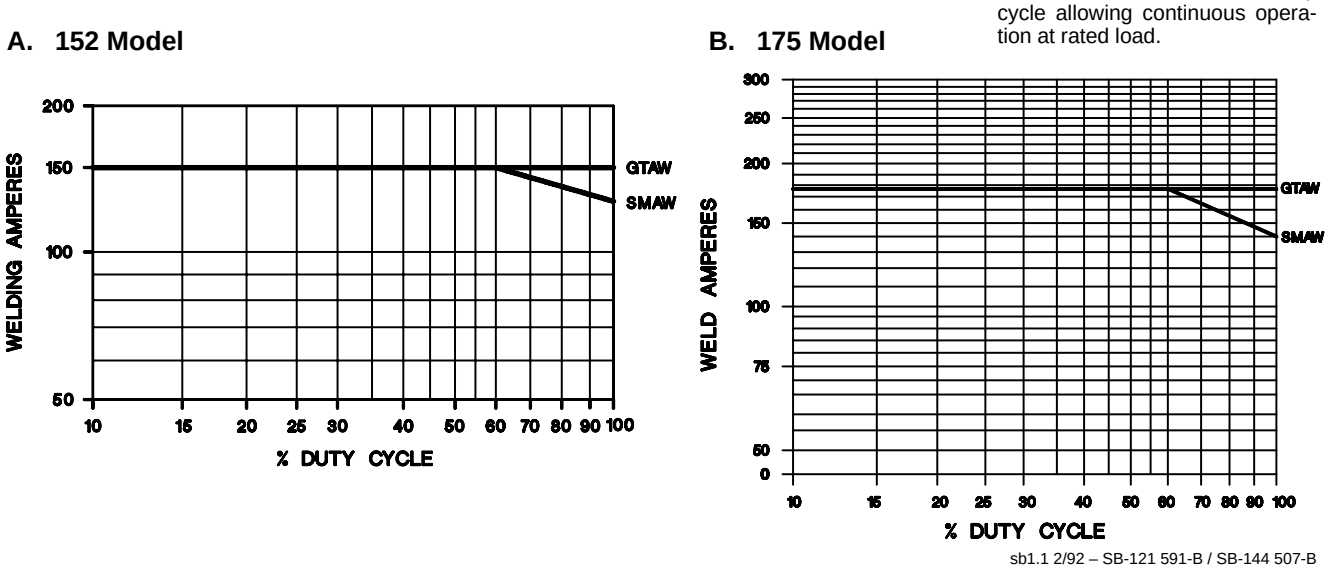

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Figure 2-2. Duty Cycle Chart

SECTION 3 – INSTALLATION

3-1. Typical Process Connections

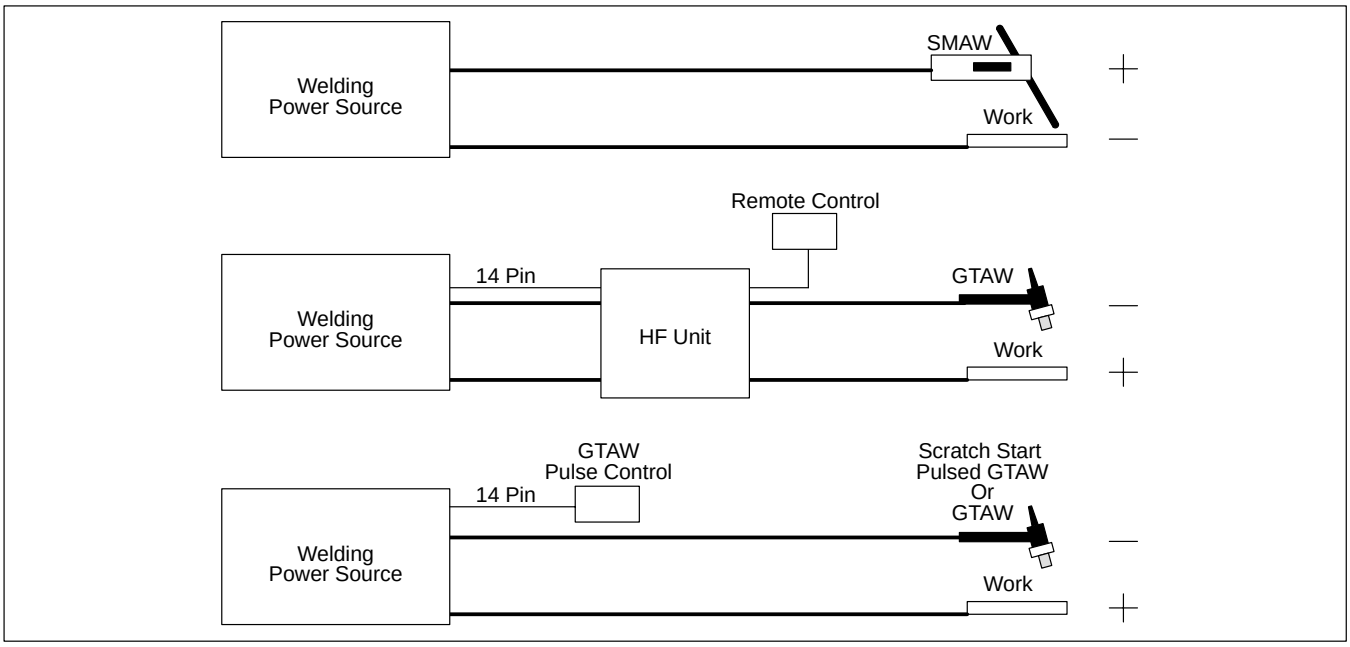

Figure 3-1. Typical Process Connections

3-2. Selecting A Location And Moving Welding Power Source

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Disconnect input power conductors from deenergized supply line BEFORE moving welding power source.

FIRE OR EXPLOSION can result from placing unit on, over, or near combustible surfaces.

- Do not locate unit on, over, or near combustible surfaces.
- Do not install unit near flammables.

BLOCKED AIRFLOW causes overheating and possible damage to unit.

- Do not block or filter airflow.

Warranty is void if any type of filter is used.

FUMES can be hazardous; LACK OF FRESH AIR AND PROPER VENTILATION can be harmful.

- Do not breathe welding fumes.
- Place unit only where there is a good fresh air supply and proper ventilation.

FALLING EQUIPMENT can cause serious personal injury and equipment damage.

- Use handle to lift unit.
- Have person of adequate physical strength lift unit.
- Move unit with hand cart or similar device.

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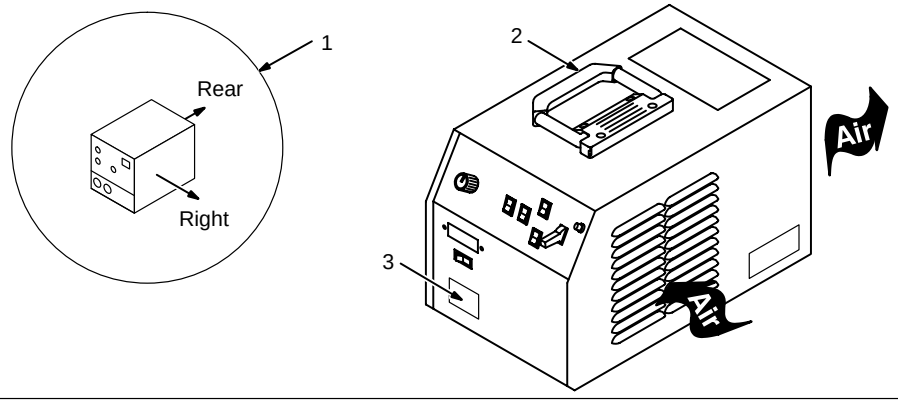


1 10 in (254 mm) Open Space On Right Side And Rear Of Unit For Good Airflow

2 Lifting Handle

Use handle to move unit.

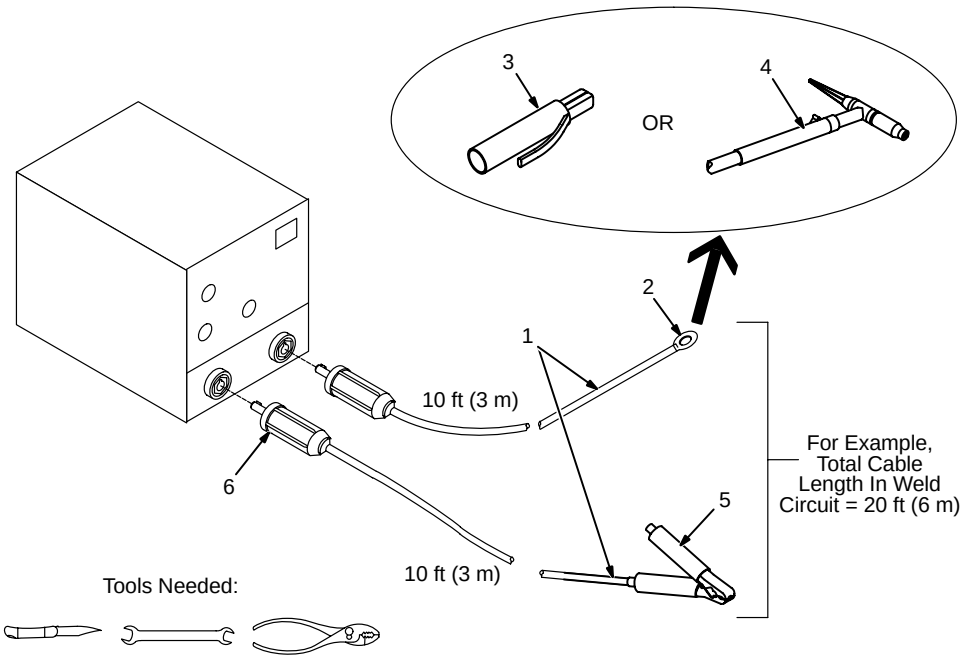
3 Rating Label

Locate unit near correct input power supply.

Ref. SA-145 666-B

Figure 3-2. Location And Movement Of Welding Power Source

3-3. Selecting And Preparing Weld Output Cables



1 Weld Output Cable

Determine total cable length in weld circuit and maximum welding amperes. Use Table 3-1 to select proper cable size.

Use shortest cables possible.

Do not use damaged cables.

2 Terminal Lug

Use lugs of proper amperage capacity and hole size for connecting to work clamp or electrode holder.

3 Insulated Electrode Holder

4 GTAW Torch

Install according to manufacturer's instructions.

5 Work Clamp

Install onto work cable.

6 Dinse-Type Connector

Install onto weld cable as shown in Figure 3-4.

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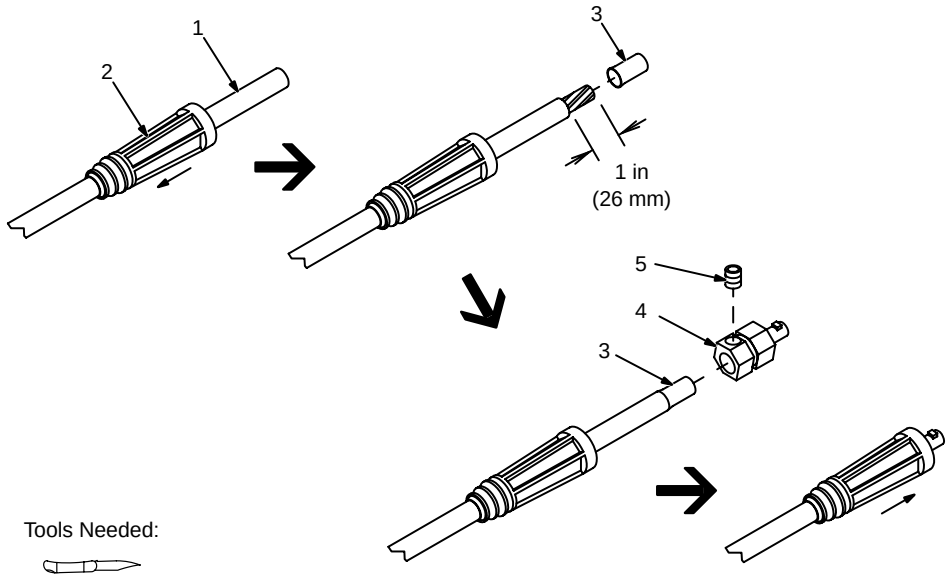
Figure 3-3. Selecting And Preparing Weld Output Cables

Table 3-1. Weld Cable Size*

Welding Amperes	Total Cable (Copper) Length In Weld Circuit Not Exceeding							
	100 ft (30 m) Or Less		150 ft (45 m)	200 ft (60 m)	250 ft (70 m)	300 ft (90 m)	350 ft (105 m)	400 ft (120 m)
	10 To 60% Duty Cycle	60 Thru 100% Duty Cycle	10 Thru 100% Duty Cycle					
100	4	4	4	3	2	1	1/0	1/0
150	3	3	2	1	1/0	2/0	3/0	3/0
200	3	2	1	1/0	2/0	3/0	4/0	4/0
250	2	1	1/0	2/0	3/0	4/0	2-2/0	2-2/0

*Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of not more than 300 circular mils per ampere. S-0007-C



1 Weld Output Cable

2 Handle

3 Sleeve

Slide handle onto cable; strip cable and install sleeve.

4 Connector Body

5 Setscrew

Insert cable with sleeve fully into connector body, tighten setscrew, and slide handle over connector.

If job requires cable larger than 3/0 AWG, use 2 ft (610 mm) or shorter piece of 3/0 AWG cable for Dinse-Type connector installation. Connect other end of short cable to the 4/0 or larger weld cable.

ST-156 496

Figure 3-4. Dinse-Type Connector Assembly

3-4. Connecting To Weld Output Receptacles

⚠ WARNING

ELECTRIC SHOCK can kill; ARCING can burn skin or damage electrical equipment.

- Do not touch live electrical parts.
- Turn Off welding power source before making any weld output connections.
- Do not change position of welding cable connectors while welding.
- Be sure connectors are secure in receptacles before welding.

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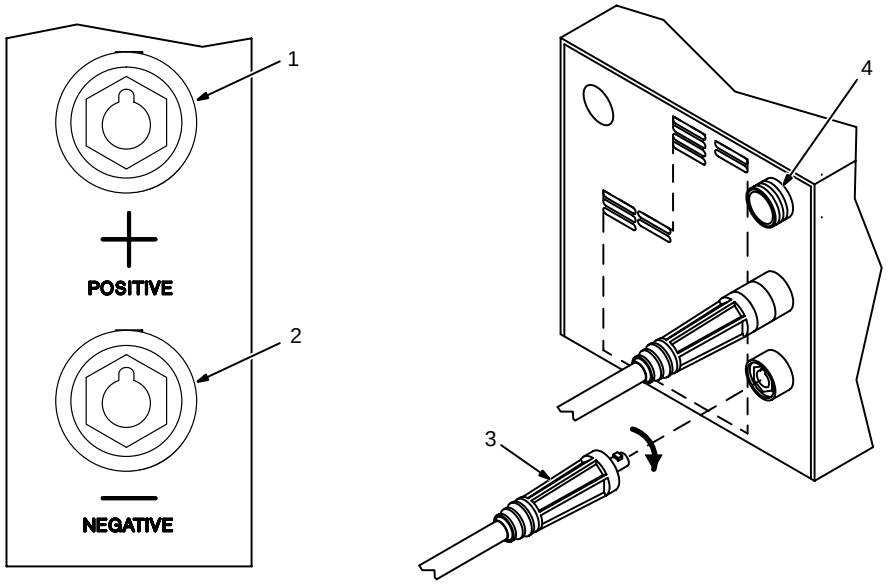


1 Positive (+) Weld Output Receptacle

2 Negative (–) Weld Output Receptacle

3 Connector

For Electrode Positive (DCEP), connect work cable connector to negative (–) receptacle and electrode holder cable connector to positive (+) receptacle.

For Electrode Negative (DCEN), reverse cable connections.

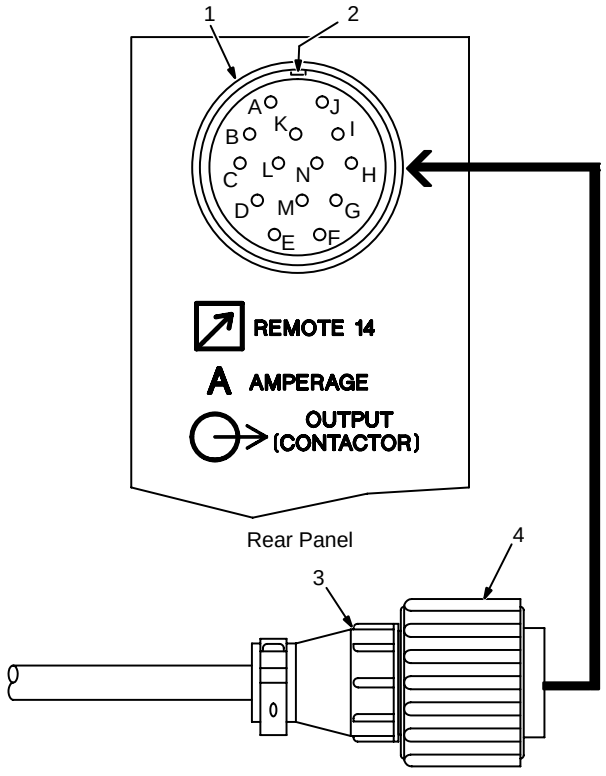
Align keyway, insert connector, and turn clockwise.

4 Remote 14 Receptacle (see Section 3-5).

Ref. SC-140 373 / Ref. ST-152 126

Figure 3-5. Connecting To Weld Output Receptacles

3-5. Remote 14 Receptacle Information And Connections



1 Remote 14 Receptacle RC7

2 Keyway

3 Plug

4 Threaded Collar

To connect to this receptacle, align keyway, insert plug, and tighten threaded collar.

Socket Information:

Remote Contactor

A +15 volts dc

B Contact closure to pin A completes +15 volts dc contactor control circuit.

Remote Amperage/Voltage Control

C Command reference; +10 volts dc.

D Control circuit common.

E Input command signal (potentiometer wiper or 0 to +10 volts dc).

K Chassis common.

The remaining sockets are not used.

sb7.1* 8/92 – Ref. SC-140 373 / Ref. S-0004-A / S-0750

Figure 3-6. Remote 14 Connections

3-6. Connecting Input Power

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Turn Off welding power source, and disconnect input power before inspecting or installing.
- Have only qualified persons install unit.
- Installation must meet National Electrical Code and all other codes.

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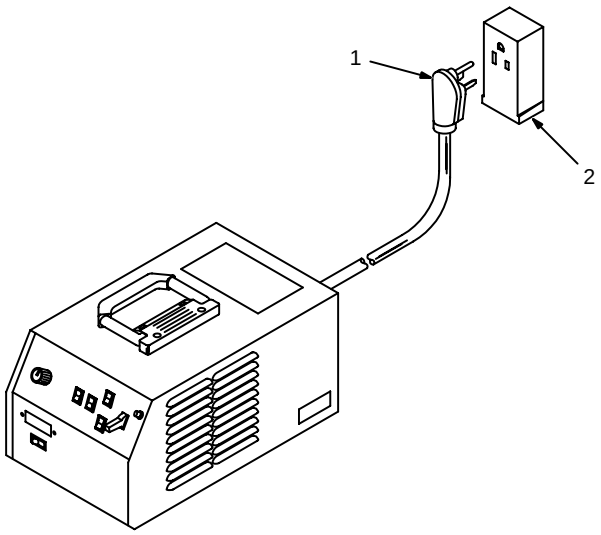
A. Connecting Input Power To 152 Models



1 230 VAC Cord/Plug

2 230 VAC Grounded Receptacle

An individual branch circuit capable of carrying 25 amperes, and including overcurrent protection such as fuses or circuit breaker is required. Recommended standard fuse or circuit breaker rating is 40 amperes.

Connect input power plug to proper 230 VAC receptacle.

ST-156 250

Figure 3-7. Input Power Connections

B. Connecting Input Power To 175 Models

Table 3-2. Electrical Service Requirements For 175 Ampere Models*

Input Voltage	460
Input Amperes At Rated Output	12
Recommended Standard Fuse Or Circuit Breaker Rating In Amperes[1]	20
Input Conductor Size In AWG/Kcmil[2]	14
Max Input Conductor Length In Feet (Meters)[3]	326 (99)
Grounding Conductor Size In AWG/Kcmil[4]	14

* These values are calculated from the 1990 edition of the National Electrical Code (NEC).

1 Recommended fuse or circuit breaker size is that closest to 150% of rated input amperage of the welding power source. Article 630-12(a) of NEC allows fuse or circuit breaker sizing up to 200% of rated input amperage.

2 Input conductor size is for insulated copper wire with 75°C rating with not more than three single current-carrying conductors in a cable or raceway (Table 310-16 of NEC).

3 Maximum length is to prevent more than a 3% voltage drop between service entrance and input terminals of the welding power source (Articles 210-19(a) and 215-2(b) of NEC).

4 The grounding conductor shall be colored or identified as specified in the NEC. Grounding conductor size for copper wire is not required to be larger than input conductor (Article 250-95 of NEC).

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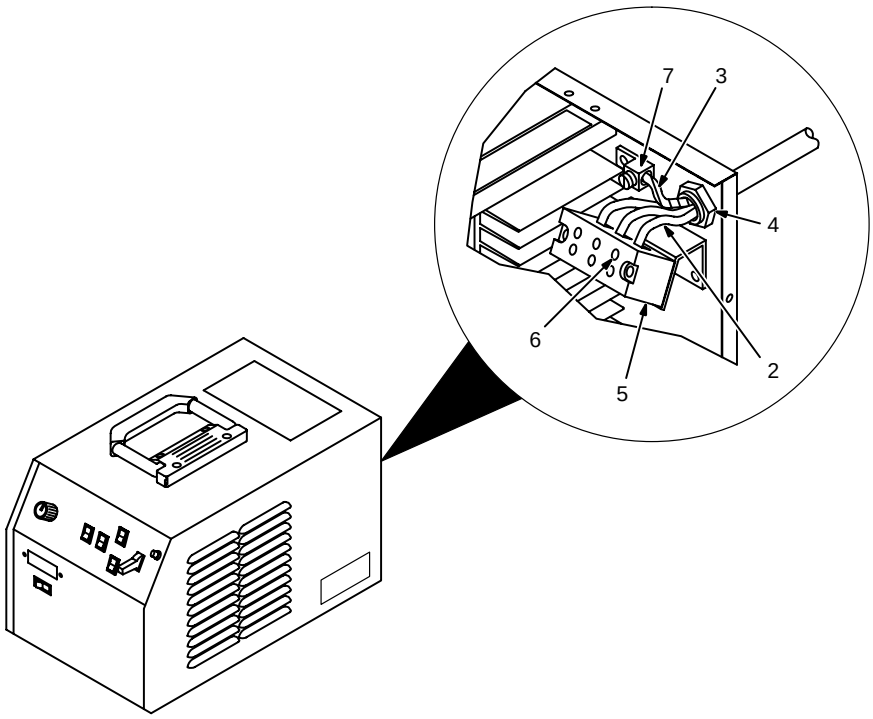

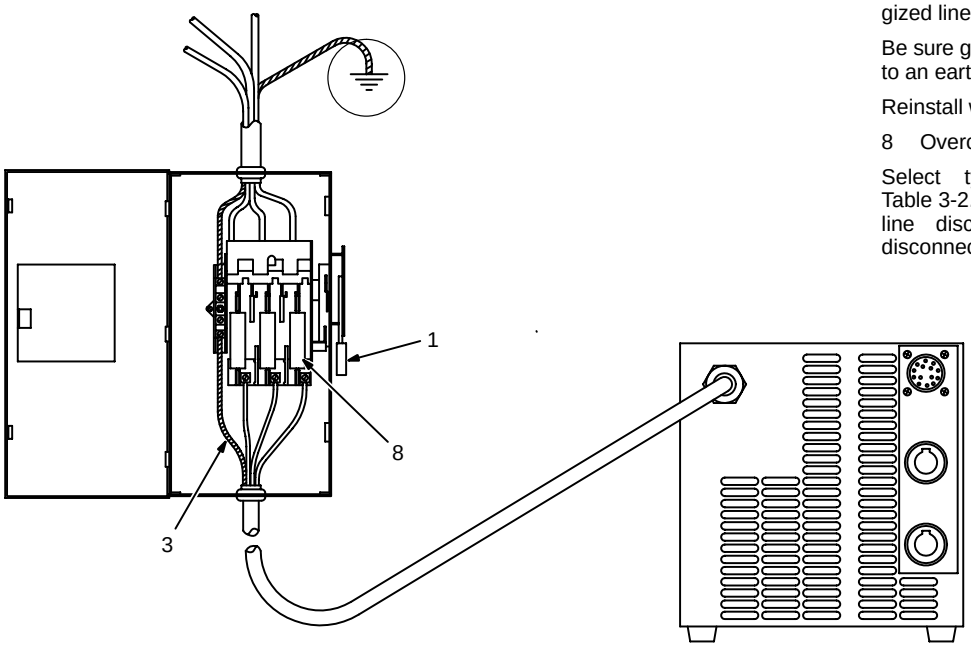

Have only qualified persons make this installation.

Remove wrapper.

1 Line Disconnect Device Of Proper Rating

2 Input Conductors

3 Grounding Conductor

Select size and length using Table 3-2. Conductor rating must comply with national, state, and local electrical codes.

Strip 3/8 in (10 mm) insulation off all conductors.

4 Strain Relief Connector

Insert conductors through strain relief.

5 Input Terminal Block

6 Line Terminals

7 Ground Terminal

Insert grounding conductor into grounding terminal and tighten screw.

Insert each input conductor into proper screw terminal L1, L2, or L3 on terminal block and tighten screws.

Install and connect grounding conductor and input conductors in conduit or equivalent to deenergized line disconnect device.

Be sure grounding conductor goes to an earth ground.

Reinstall wrapper.

8 Overcurrent Protection

Select type and size using Table 3-2. Install into deenergized line disconnect device (fused disconnect switch shown)

Tools Needed:

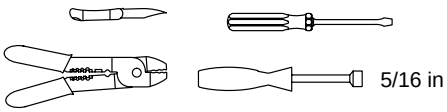

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Figure 3-8. Input Power Connections

SECTION 4 – OPERATION

⚠ WARNING

ELECTRIC SHOCK can kill.

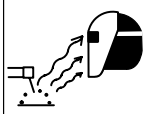
- Always wear dry insulating gloves.
- Insulate yourself from work and ground.
- Do not touch live electrical parts.
- Keep all panels and covers securely in place.

FUMES AND GASES can be hazardous to your health.

- Keep your head out of the fumes.
- Ventilate area, or use breathing device.
- Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used.

WELDING can cause fire or explosion.

- Do not weld near flammable material.
- Watch for fire; keep extinguisher nearby.
- Do not locate unit over combustible surfaces.
- Do not weld on closed containers.
- Allow work and equipment to cool before handling.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

- Wear welding helmet with correct shade of filter.
- Wear correct eye, ear, and body protection.

MOVING PARTS can cause injury.

- Keep away from moving parts.
- Keep all doors, panels, covers, and guards closed and securely in place.

MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

See Safety Precautions at beginning of manual for basic welding safety information.

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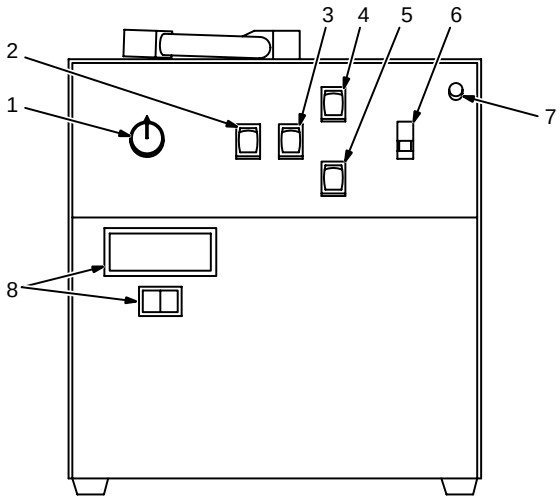
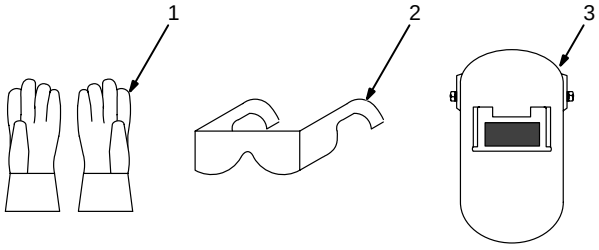


1 Amperage Adjustment Control
2 Amperage Control Switch
3 Output (Contactor) Switch
4 Touch Start Switch
5 Weld Process Switch
6 Power Switch
7 Pilot Light
8 Optional Amperage/Voltage Meter And Switch

ST-152 127

Figure 4-1. Controls



1 Insulating Gloves
2 Safety Glasses With Side Shields
3 Welding Helmet

Wear dry insulating gloves, safety glasses with side shields, and a welding helmet with a correct shade of filter (see ANSI Z49.1).

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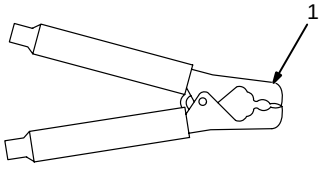
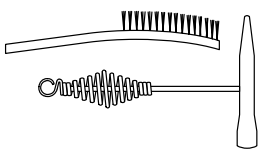
Figure 4-2. Safety Equipment



Tools Needed:



1 Work Clamp

Connect work clamp to a clean, paint-free location on workpiece, as close to weld area as possible.

Use wire brush or sandpaper to clean metal at weld joint area. Use chipping hammer to remove slag after welding.

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Figure 4-3. Work Clamp

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch live electrical parts.
- Do not touch weld output receptacles when contactor is energized.
- Do not touch electrode and work clamp at the same time.

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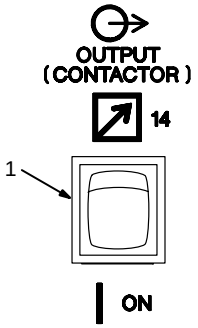


1 Output (Contactor) Switch

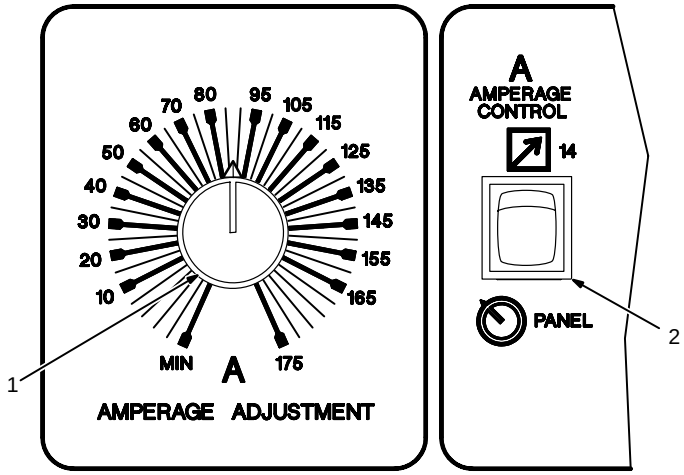
Use switch to select way of controlling output.

For front panel control, place switch in On position.

For remote control, place switch in Remote 14 position (see Section 3-5).

⚠ Weld output receptacles are energized when switch is On and Power is On.

Figure 4-4. Output (Contactor) Switch



1 Amperage Adjustment Control

Use control to select weld amperage. Amperage may be adjusted while welding.

2 Amperage Control Switch

Use switch to select way of controlling amperage adjustment.

For front panel control, place switch in the Panel position.

For remote control, place switch in Remote 14 position (see Section 3-5).

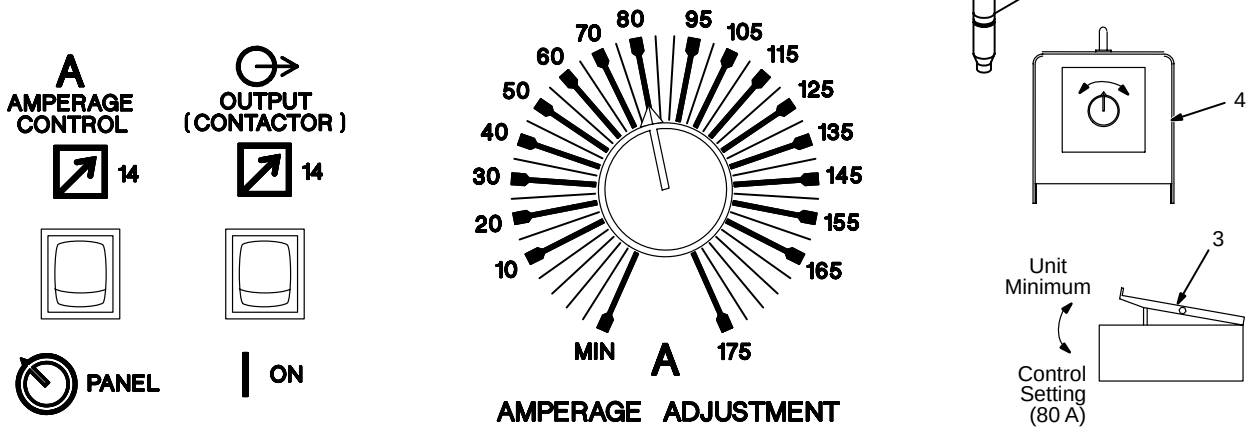
3 Remote Foot Control

4 Remote Hand Dial

5 Remote Fingertip Control

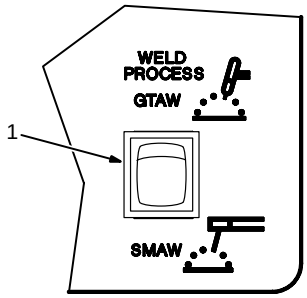
See Example below.

EXAMPLE Of Combination Remote Amperage Control



ST-159 059 / Ref. SC-140 372-C / S-0769

Figure 4-5. Amperage Controls



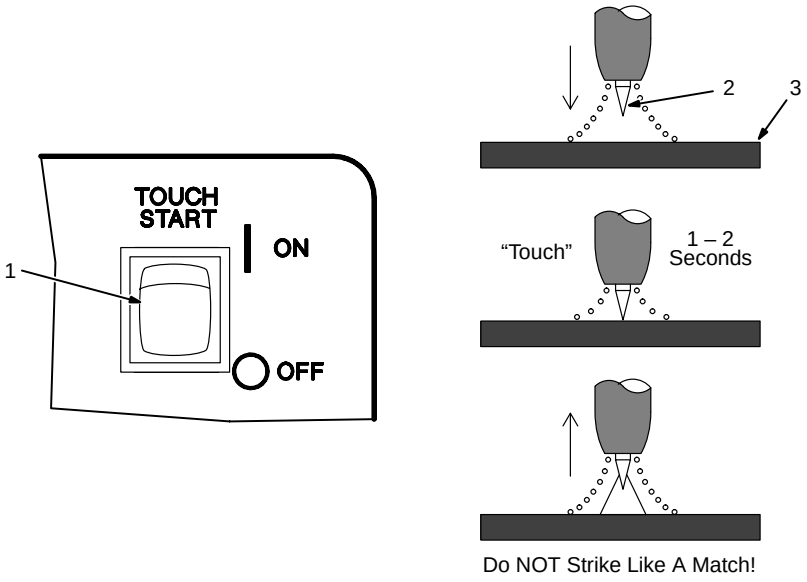
1 Weld Process Switch

Use switch to select type of weld output current. Use GTAW position for Gas Tungsten Arc Welding. Use SMAW position for Shielded Metal Arc Welding.

Switch position determines the operation of the Touch Start switch (see Figure 4-7).

Figure 4-6. Weld Process Switch

NOTE ☞ *Touch Start switch must be in Off position when using a High-Frequency unit with this welding power source, or when using the SMAW welding process.*



1 Touch Start Switch

Use switch to select touch start On or Off.

With touch start On, start an arc in GTAW welding as follows:

2 GTAW Electrode

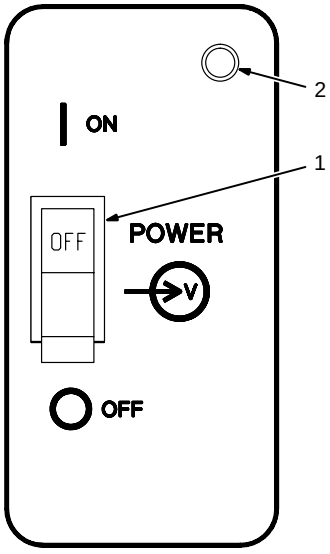
3 Workpiece

Touch tungsten electrode to workpiece at weld start point, **hold electrode to workpiece for 1-2 seconds**, and slowly lift electrode. An arc will form when electrode is lifted.

Normal open-circuit voltage is not present before tungsten electrode touches workpiece; only a low sensing voltage is present between electrode and workpiece. The solid-state output contactor does not energize until after tungsten electrode is touching workpiece. This allows electrode to touch workpiece without overheating, sticking, or getting contaminated.

Ref. S-156 279

Figure 4-7. Touch Start Switch

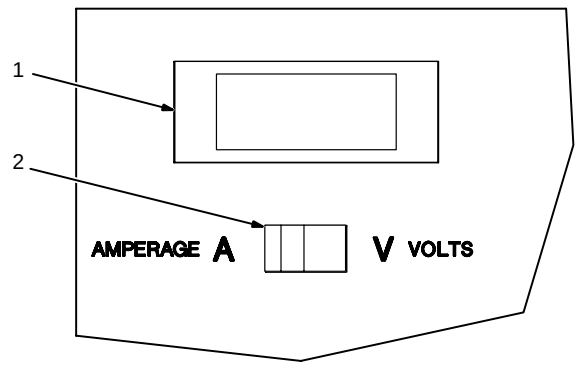


1 Power Switch

Use switch to turn unit and pilot light On and Off.

2 Pilot Light

Figure 4-8. Power Switch And Pilot Light



1 Amperage/Voltage Meter

Meter displays amperage or voltage output.

2 Meter Switch

Use switch to select amperage (A) or voltage (V) display.

In Volts position, the meter displays the voltage at the weld output receptacles. In Amperage position, the meter displays the welding current during welding, and the preset amperage when welding is not taking place.

The meter displays the actual value for 15 seconds after welding stops (see Section 5-4).

Figure 4-9. Optional Amperage/Voltage Meter And Switch

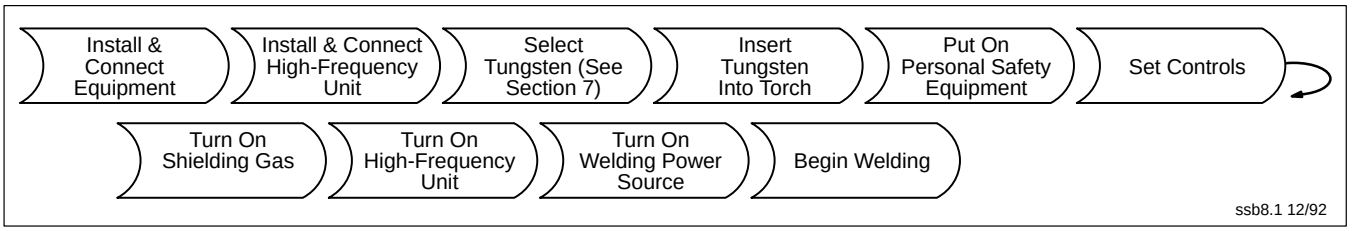


Figure 4-10. Sequence Of Gas Tungsten Arc Welding (GTAW)

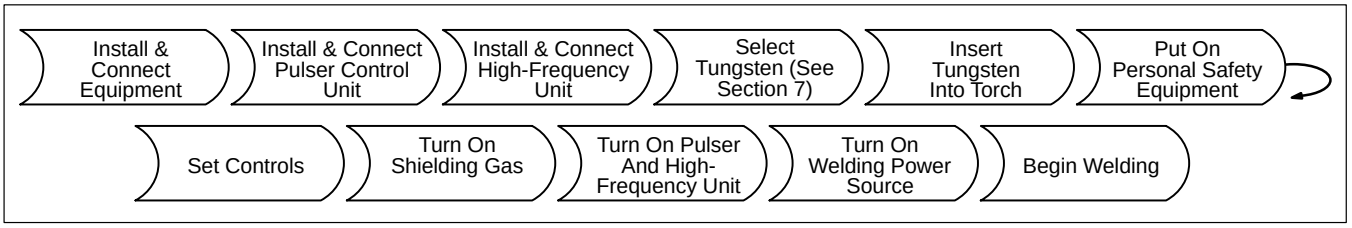

Install & Connect Equipment
Install & Connect Pulser Control Unit
Install & Connect High-Frequency Unit
Select Tungsten (See Section 7)
Insert Tungsten Into Torch
Put On Personal Safety Equipment
Set Controls
Turn On Shielding Gas
Turn On Pulser And High-Frequency Unit
Turn On Welding Power Source
Begin Welding

Figure 4-11. Sequence Of Gas Tungsten Arc Welding - Pulsed (GTAW-P)

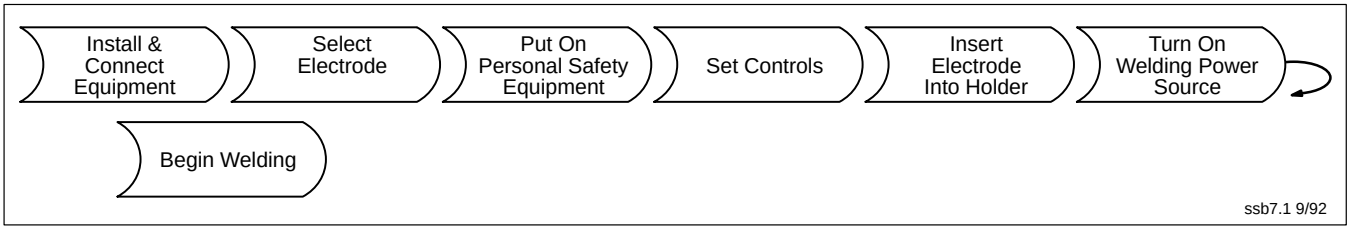


Figure 4-12. Sequence Of Shielded Metal Arc Welding (SMAW)

SECTION 5 – MAINTENANCE & TROUBLESHOOTING

⚠ WARNING

ELECTRIC SHOCK can kill; SIGNIFICANT DC VOLTAGE exists after removal of input power.

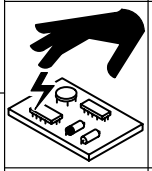
- Do not touch live electrical parts.
- Turn Off welding power source, disconnect input power, wait 60 seconds, measure voltage on input capacitors according to Section 5-3, and wait for voltage to drop to zero before touching any parts.

HOT PARTS can cause severe burns.

- Allow cooling period before maintaining or servicing.

MOVING PARTS can cause injury.

- Keep away from moving parts.



STATIC ELECTRICITY can damage parts on circuit boards.

- Put on grounded wrist strap BEFORE handling boards or parts.

Maintenance to be performed only by qualified persons.

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5-1. Routine Maintenance

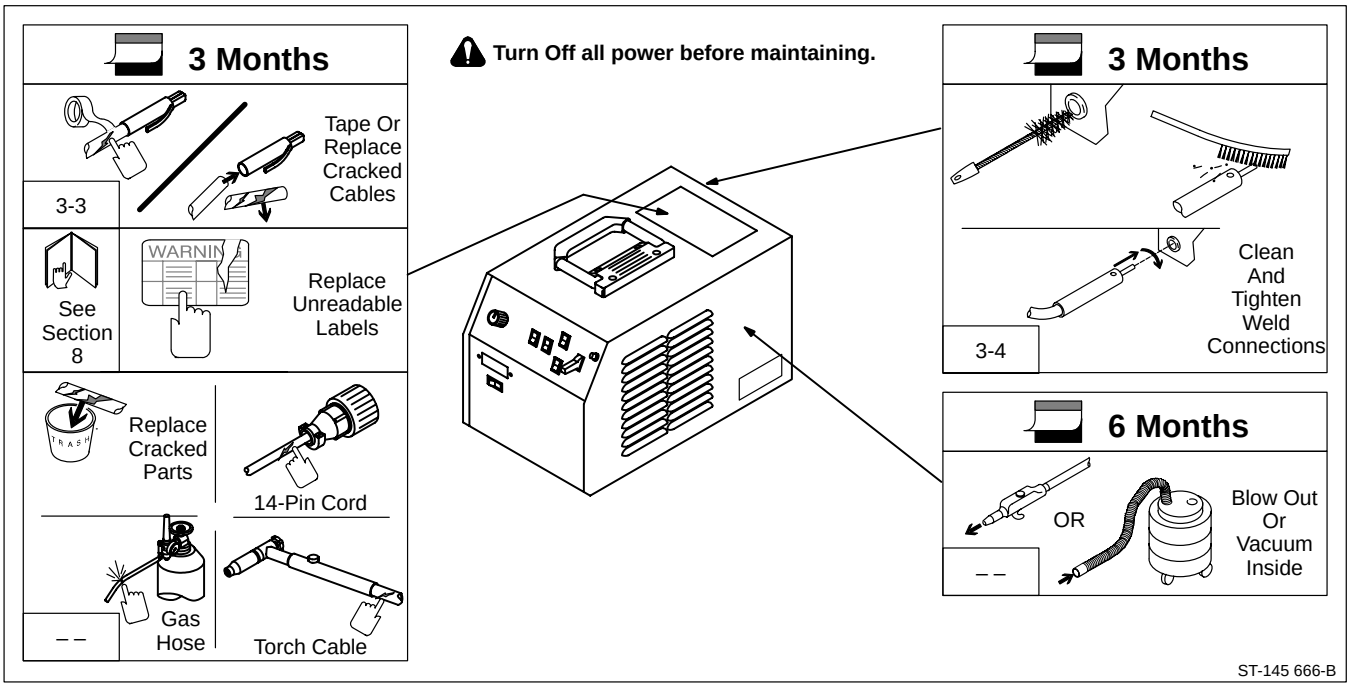


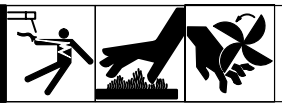
Figure 5-1. Maintenance Schedule

5-2. Overload Protection

Thermostats TP1 and TP2 protect the unit from damage due to overheating. If the unit gets too hot, TP1 and/or TP2 open and weld output stops. The pilot light stays on, and the fan keeps running to cool the transformer. Wait several minutes before trying to weld.

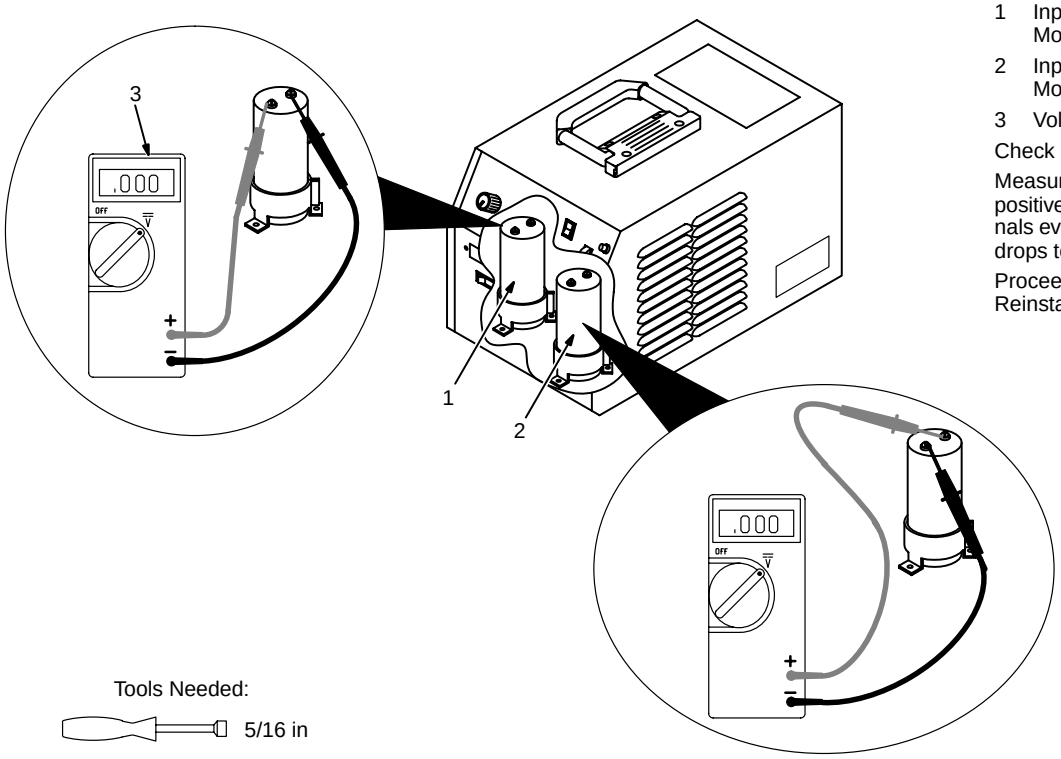
5-3. Measuring Input Capacitor Voltage

⚠ WARNING



READ SAFETY BLOCKS at start of Section 5 before proceeding.

⚠ Significant DC voltage can remain on capacitors after unit is Off. Always check capacitors as shown to be sure they have discharged before working on unit.



Tools Needed:

5/16 in

Turn Off welding power source and disconnect input power.

Remove wrapper.

1 Input Capacitor C1 (Both Models)

2 Input Capacitor C2 (175 Models Only)

3 Voltmeter

Check input capacitor(s).

Measure the dc voltage across the positive (+) and negative (–) terminals every 30 seconds until voltage drops to 0 (zero) volts.

Proceed with job inside unit. Reinstall wrapper when finished.

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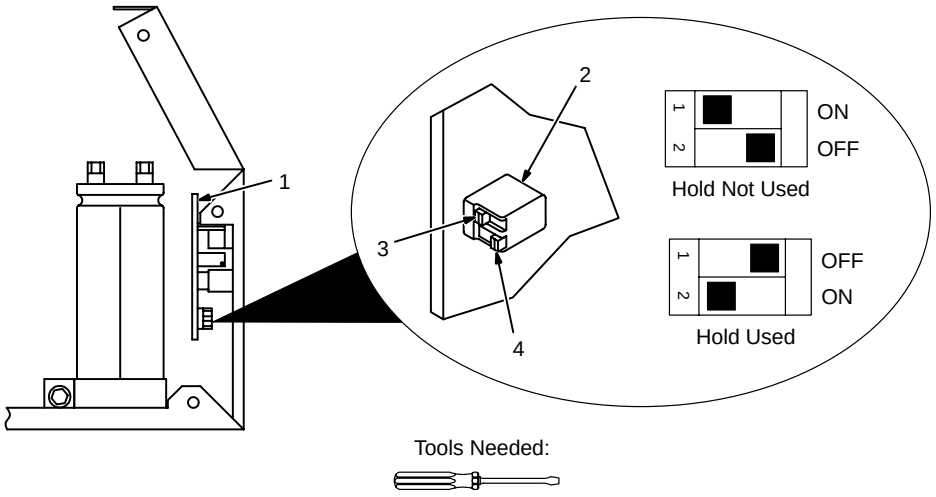
Figure 5-2. Measuring Input Capacitor Voltage

5-4. Changing Amperage/Voltage Meter Hold Function

⚠ WARNING

READ SAFETY BLOCKS at start of Section 5 before proceeding.



Tools Needed:

The Amperage/Voltage meter is able to hold the displayed weld output value for 15 seconds after welding stops. This procedure allows the hold function to be turned On or Off.

If the hold function is not used, the displayed value leaves when welding stops.

Turn Off welding power source, disconnect input power, and check voltage on input capacitors according to Section 5-3 before proceeding.

1 A/V Meter Board PC3

2 DIP Switch S2

3 Toggle 1

4 Toggle 2

Set toggles in desired position. Reinstall wrapper.

ST-158 741

Figure 5-3. Changing Amperage/Voltage Meter Hold Function

5-5. Troubleshooting

⚠ WARNING

ELECTRIC SHOCK can kill. SIGNIFICANT DC VOLTAGE exists after removal of input power.

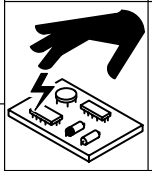
- Do not touch live electrical parts.
- Turn Off welding power source, disconnect input power, wait 60 seconds, measure voltage on input capacitors according to Section 5-3, and wait for voltage to drop to zero before touching any parts.

HOT PARTS can cause severe burns.

- Allow cooling period before servicing.

MOVING PARTS can cause injury.

- Keep away from moving parts.



STATIC ELECTRICITY can damage parts on circuit boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes.

Troubleshooting to be performed only by qualified persons.

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Table 5-1. Welding Trouble

Trouble	Remedy	Section
No weld output; unit completely inoperative.	Be sure Power switch is On.	Figure 4-8
	Secure power cord plug in receptacle (152 model).	3-6A
	Be sure line disconnect switch is On (175 model).	3-6B
	Check line fuse(s) and replace if necessary. Reset circuit breakers.	3-6
	Check for proper input power connections.	3-6
No weld output; fan motor running and pilot light on.	Check position of Output (Contactor) switch.	Figure 4-4
	Thermostats TP1 and/or TP2 open (overheating). Allow fan to run; thermostat(s) closes when unit has cooled.	5-2
Low weld output with no control.	Check position of Amperage Control switch.	Figure 4-5
	Have Factory Authorized Service Station/Service Distributor check control board PC1.	– –
Limited output and low open-circuit voltage.	Check incoming power for correct voltage. Replace line fuse if open or reset circuit breaker.	3-6
	Check for proper input and output connections.	3-3, 3-4, 3-6
Erratic or improper weld output.	Tighten all welding cable connections.	3-3, 3-4
	Check for proper size and type of cable.	3-3
	Check for proper input and output connections.	3-3, 3-4, 3-6
	Replace electrode.	7-1, 7-2
Arc not forming when using Touch Start.	Check electrode and workpiece, clean as needed to allow good contact.	– –
Fan motor does not run.	Check and clear blocked fan blade; be sure blade is secure on shaft.	– –
	Have Factory Authorized Service Station/Service Distributor check fan motor.	– –

Trouble	Remedy	Section
Wandering arc; poor control of arc direction.	Reduce gas flow rate.	– –
	Select proper size tungsten.	7-1
	Properly prepare tungsten.	7-2
Tungsten electrode oxidizing and not remaining bright after conclusion of weld.	Shield weld zone from drafts.	– –
	Increase postflow time.	– –
	Check and tighten all gas fittings.	– –
	Water in torch. Refer to torch Owner's Manual for part(s) requiring replacement, and repair torch as necessary.	– –

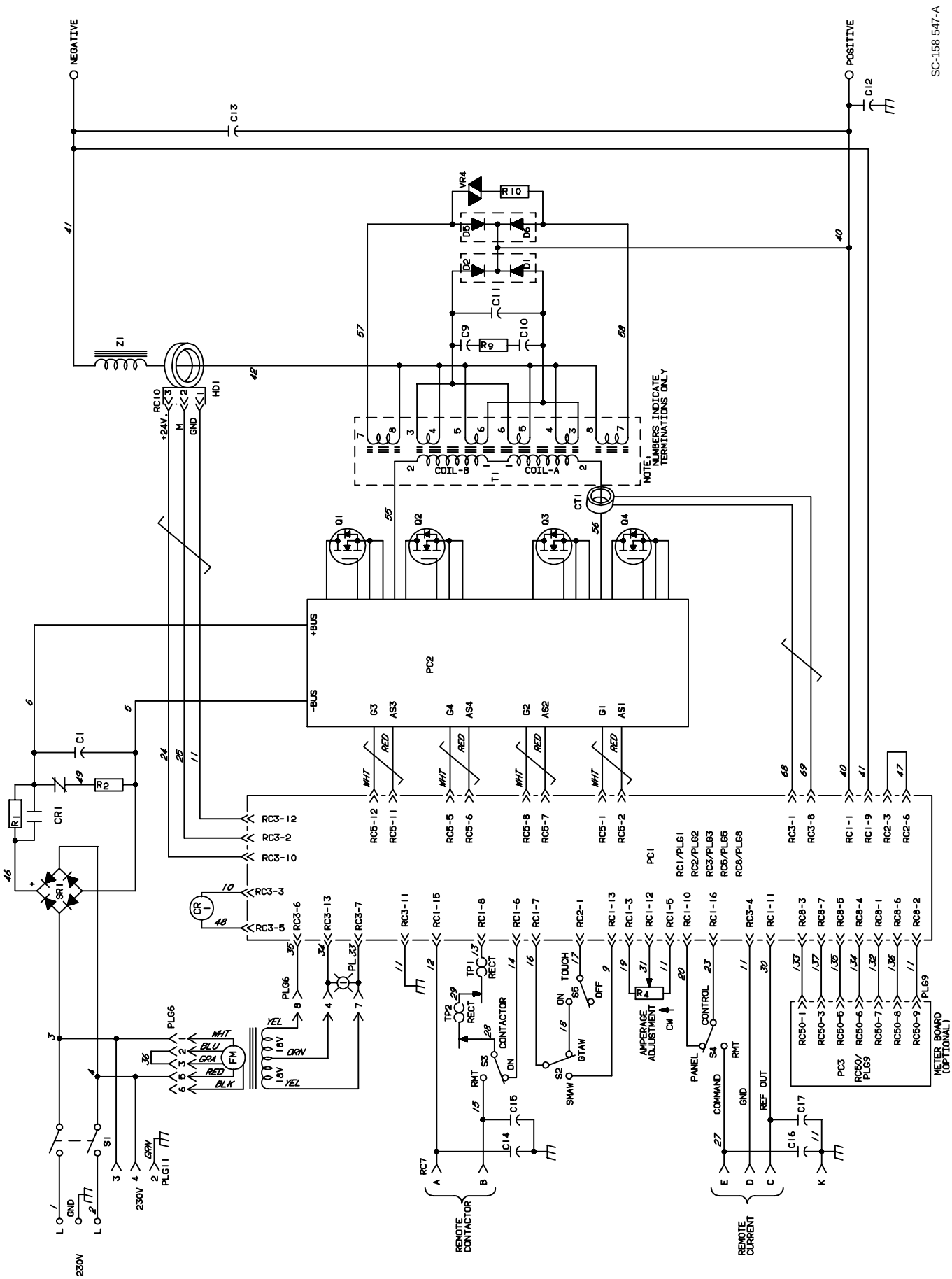


Figure 6-1. Circuit Diagram For 152 Model

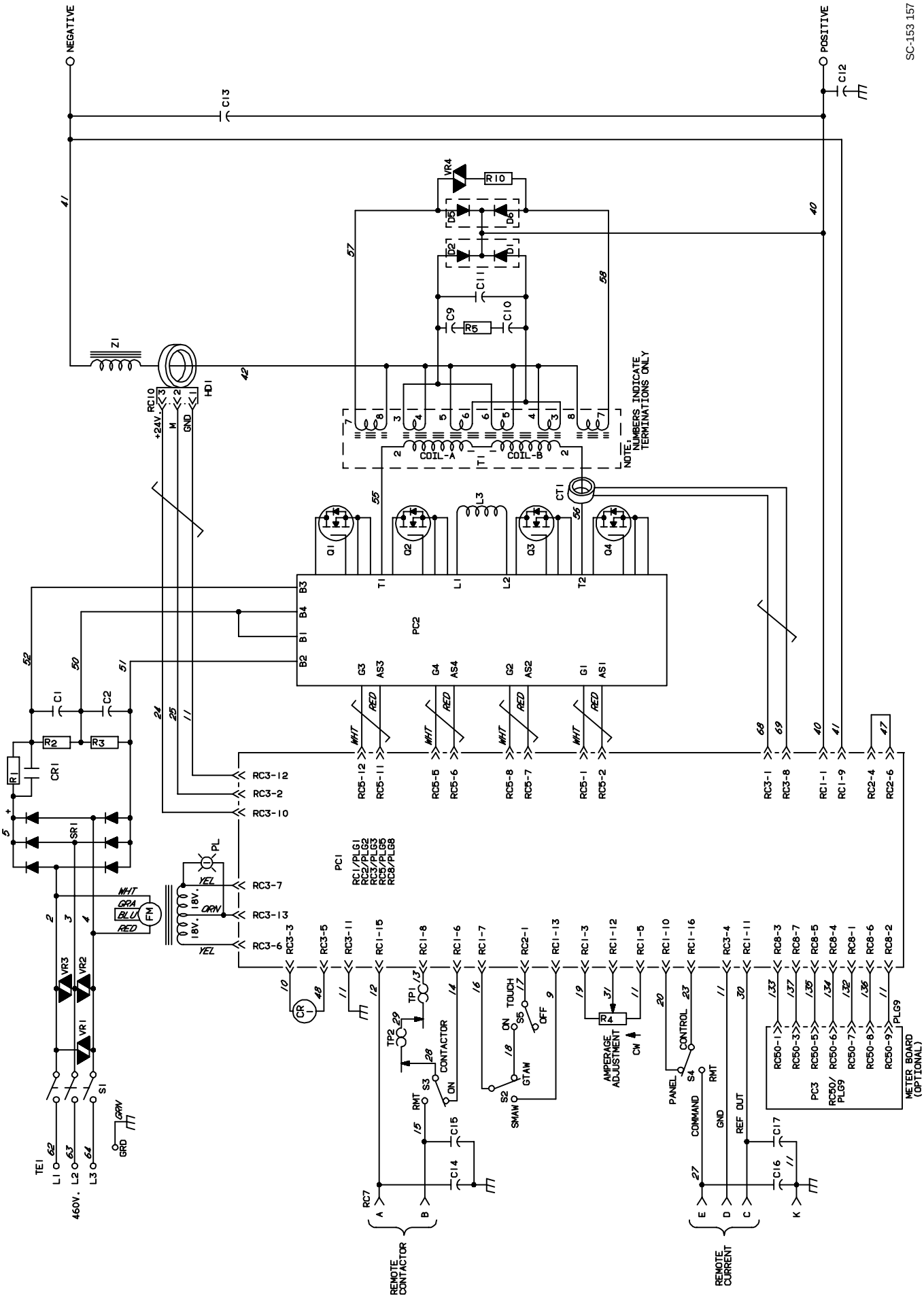


Figure 6-2. Circuit Diagram For 175 Model

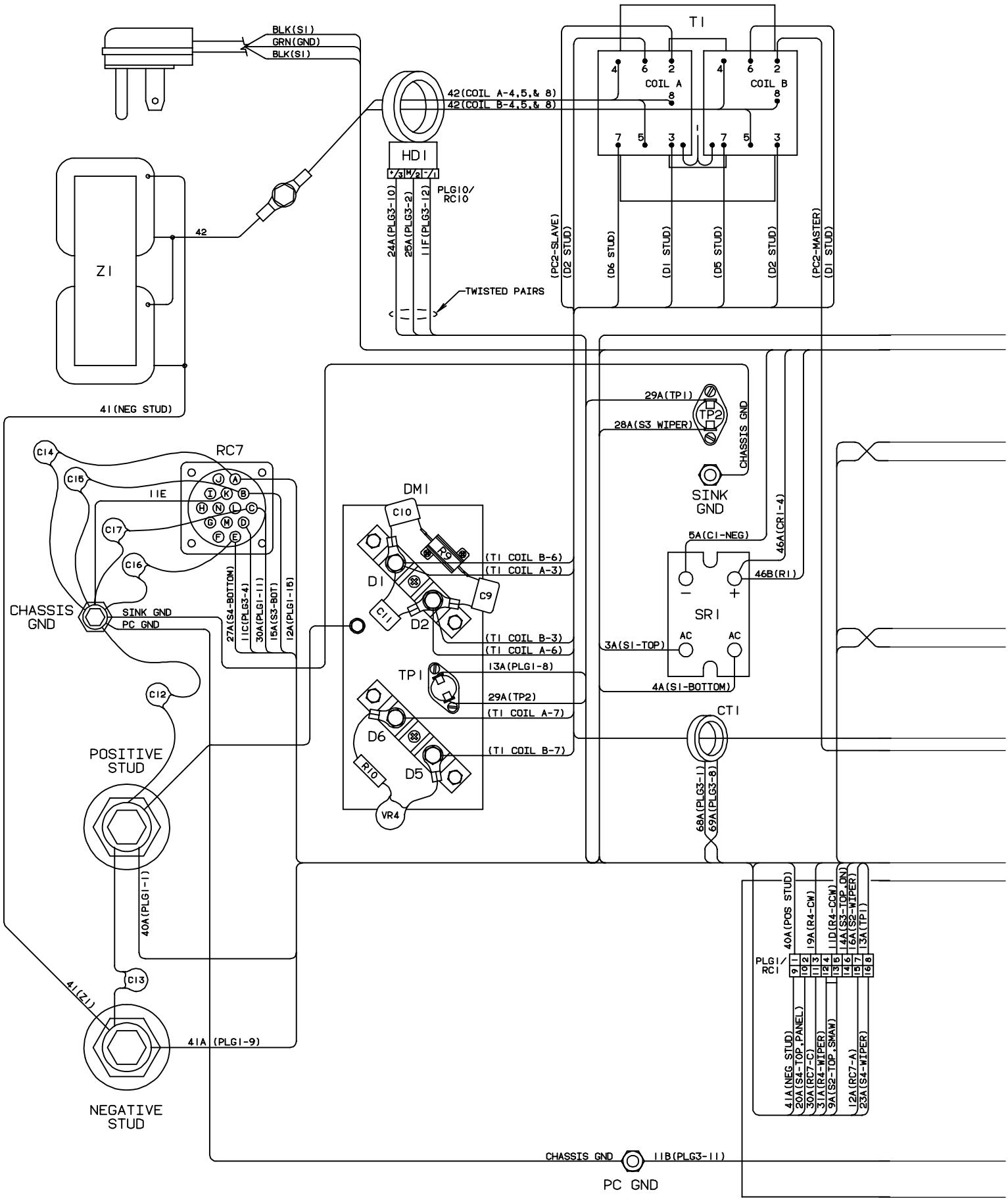
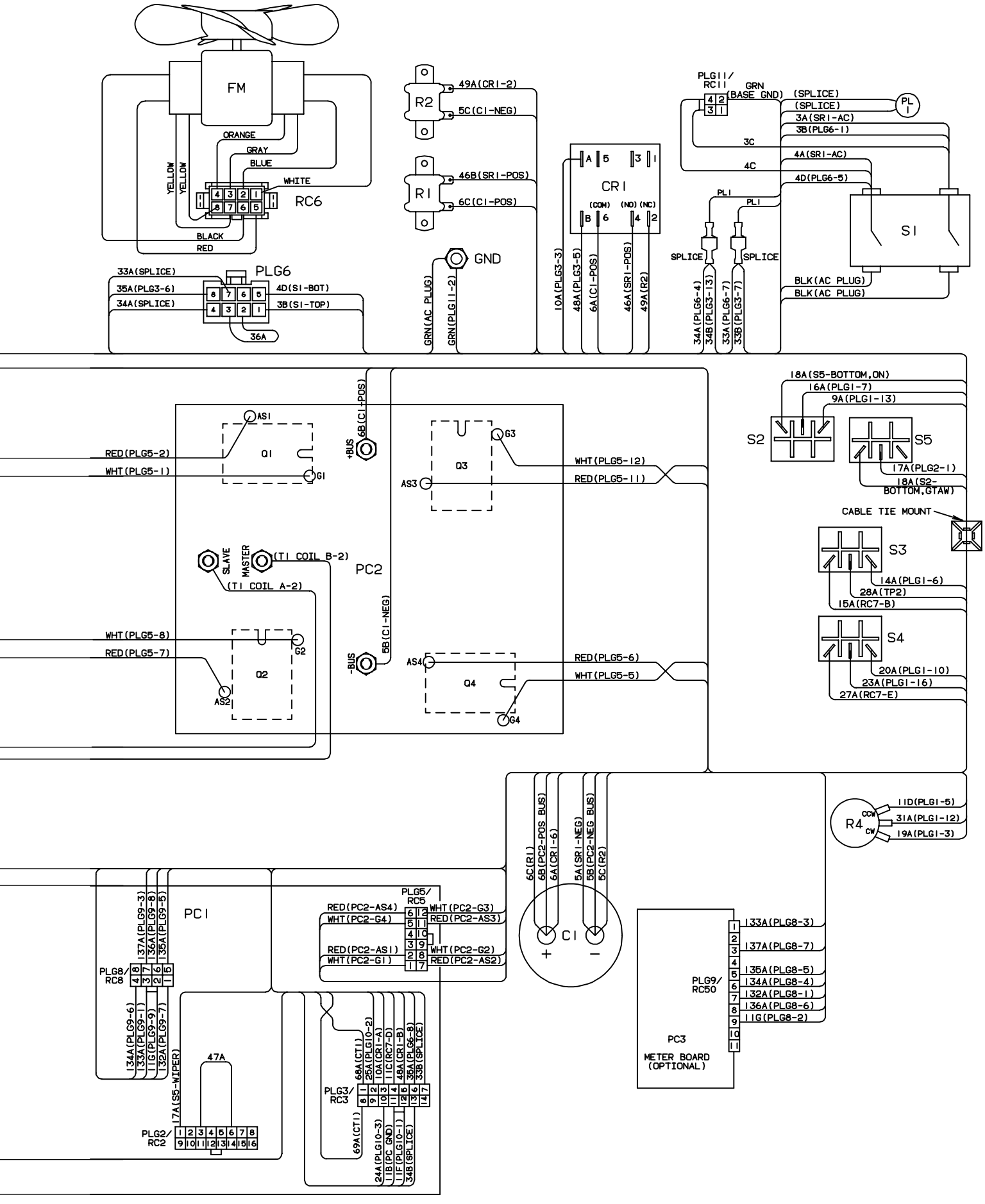


Figure 6-3. Wiring Diagram For 152 Model


FM
ORANGE
GRAY
BLUE
WHITE
YELLOW
YELLOW
BLACK
RED
RC6
R2
49A(CR1-2)
5C(C1-NEG)
R1
46B(SR1-POS)
6C(C1-POS)
GND
GRN(AC PLUG)
GRN(PLG11-2)
CR1
(COM) (NO) (NC)
10A(PLG3-3)
48A(PLG3-5)
6A(C1-POS)
46A(SR1-POS)
49A(R2)
PLG11/
RC11
GRN
(BASE GND)
(SPLICE)
(SPLICE)
3A(SR1-AC)
3B(PLG6-1)
3C
4A(SR1-AC)
4C
4D(PLG6-5)
PL1
PL1
SPLICE
SPLICE
S1
34A(PLG6-4)
34B(PLG3-13)
33A(PLG6-7)
33B(PLG3-7)
BLK(AC PLUG)
BLK(AC PLUG)
33A(SPLICE)
35A(PLG3-6)
34A(SPLICE)
PLG6
4D(SI-BOT)
3B(SI-TOP)
36A
AS1
Q1
G1
RED(PLG5-2)
WHT(PLG5-1)
+BUS
6B(C1-POS)
Q3
G3
AS3
WHT(PLG5-12)
RED(PLG5-11)
18A(S5-BOTTOM,ON)
16A(PLG1-7)
9A(PLG1-13)
S2
S5
17A(PLG2-1)
18A(S2-BOTTOM,GTAW)
CABLE TIE MOUNT
S3
14A(PLG1-6)
28A(TP2)
15A(RC7-B)
S4
20A(PLG1-10)
23A(PLG1-16)
27A(RC7-E)
SLAVE
MASTER
(T1 COIL B-2)
(T1 COIL A-2)
PC2
5B(C1-NEG)
-BUS
WHT(PLG5-8)
RED(PLG5-7)
G2
Q2
AS2
AS4
Q4
G4
RED(PLG5-6)
WHT(PLG5-5)
R4
CCW
CW
11D(PLG1-5)
31A(PLG1-12)
19A(PLG1-3)
6C(R1)
6B(PC2-POS BUS)
6A(CR1-6)
5A(SR1-NEG)
5B(PC2-NEG BUS)
5C(R2)
C1
+
−
PC1
PLG8/
RC8
137A(PLG9-3)
136A(PLG9-8)
135A(PLG9-5)
134A(PLG9-6)
133A(PLG9-1)
11G(PLG9-9)
132A(PLG9-7)
PLG5/
RC5
RED(PC2-AS4)
WHT(PC2-G4)
RED(PC2-AS1)
WHT(PC2-G1)
WHT(PC2-G3)
RED(PC2-AS3)
WHT(PC2-G2)
RED(PC2-AS2)
PLG9/
RC50
133A(PLG8-3)
137A(PLG8-7)
135A(PLG8-5)
134A(PLG8-4)
132A(PLG8-1)
136A(PLG8-6)
11G(PLG8-2)
PC3
METER BOARD
(OPTIONAL)
47A
17A(S5-WIPER)
PLG2/
RC2
PLG3/
RC3
68A(CT1)
25A(PLG10-2)
10A(CR1-A)
11C(RC7-D)
49A(CR1-B)
35A(PLG6-8)
33B(SPLICE)
69A(CT1)
24A(PLG10-3)
11B(PC GND)
11F(PLG10-1)
34B(SPLICE)

SD-158 546-A

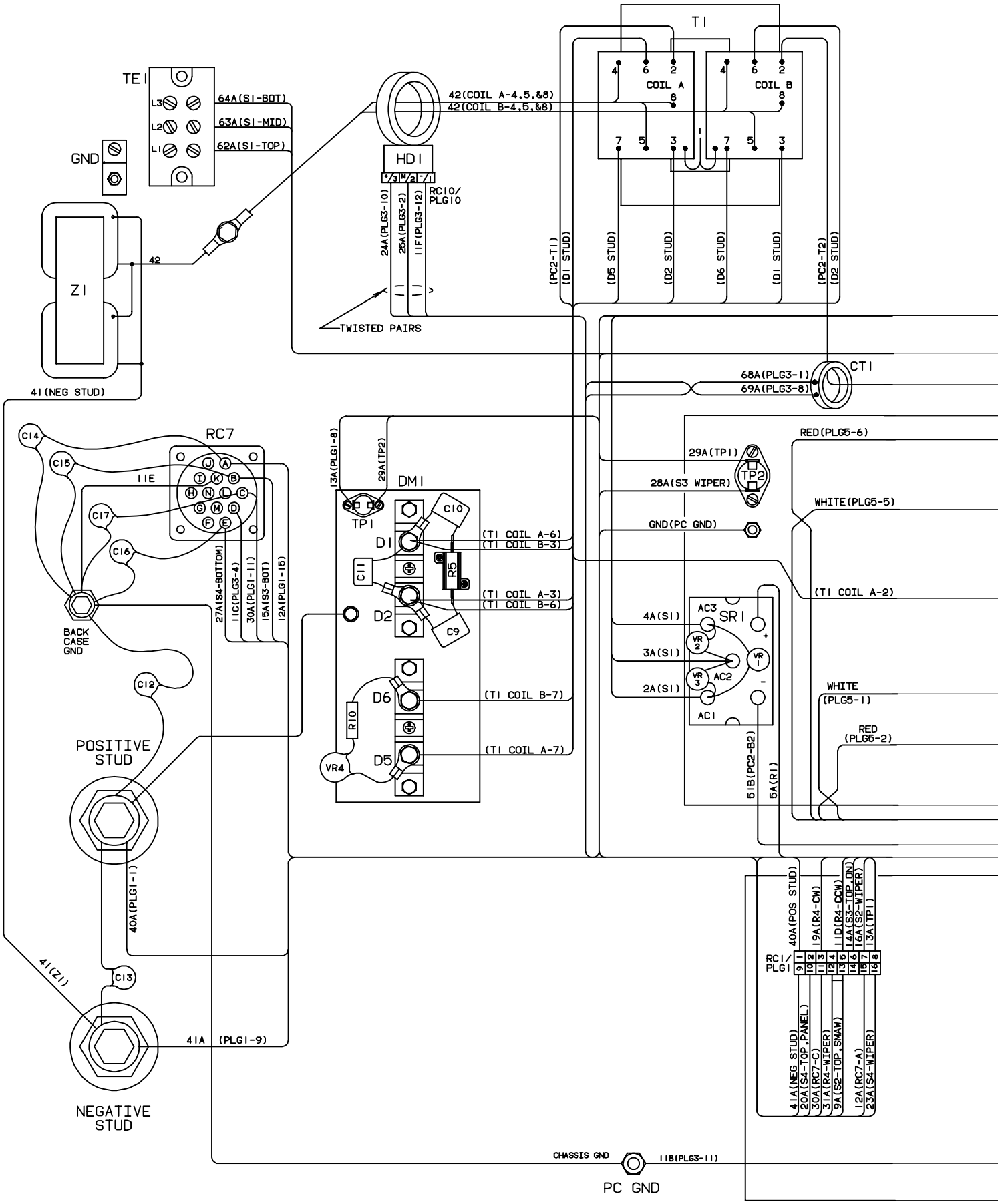
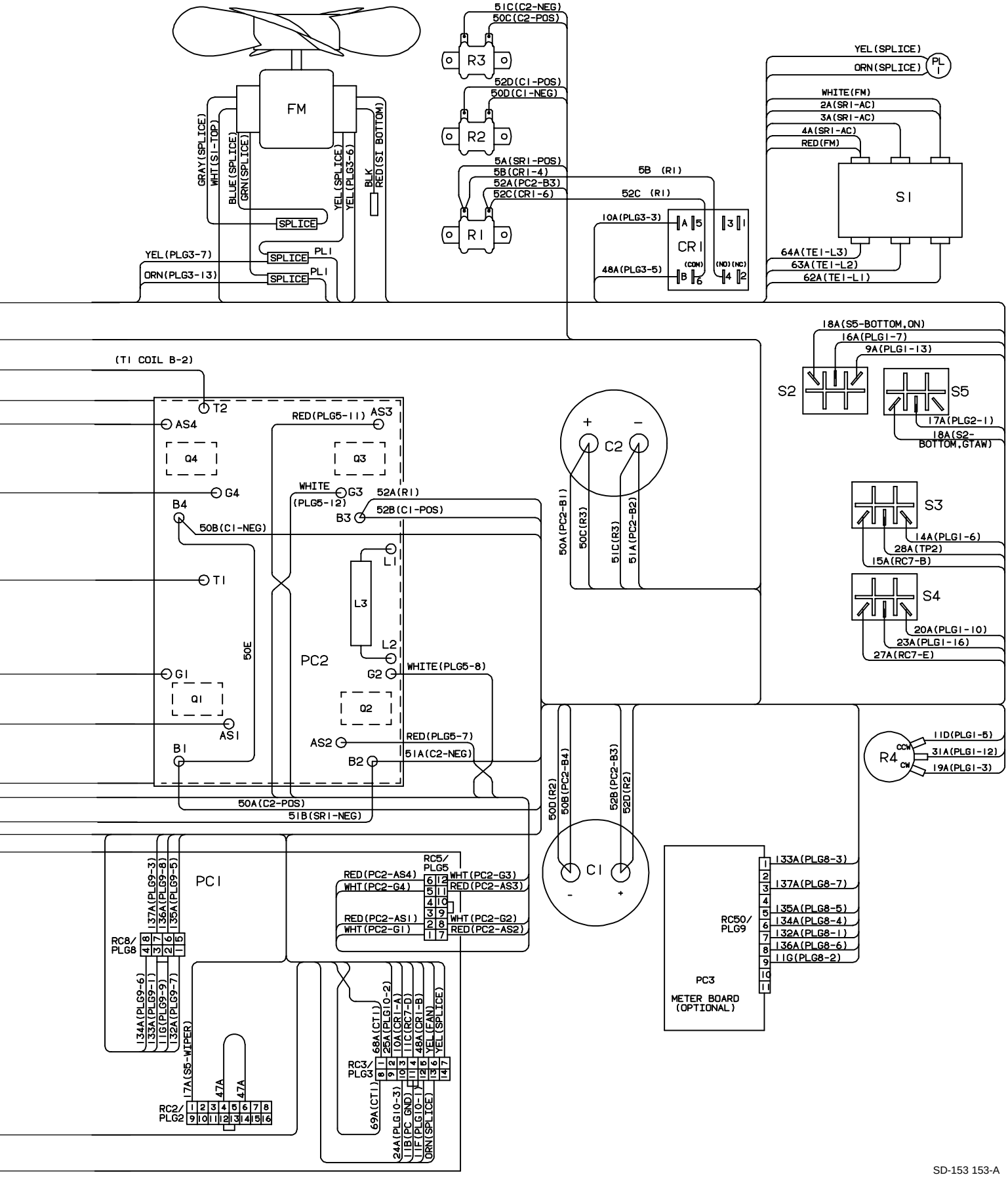


Figure 6-4. Wiring Diagram For 175 Model


FM
R3
R2
R1
CR1
S1
S2
S5
S3
S4
R4
C2
C1
PC1
PC2
PC3
METER BOARD
(OPTIONAL)
RC2/
PLG2
RC3/
PLG3
RC5/
PLG5
RC8/
PLG8
RC50/
PLG9
SPLICE
PL1
T1
T2
G1
G2
G3
G4
B1
B2
B3
B4
AS1
AS2
AS3
AS4
L1
L2
L3
Q1
Q2
Q3
Q4
50E
47A
GRAY(SPLICE)
WHT(SI-TOP)
BLUE(SPLICE)
GRN(SPLICE)
YEL(SPLICE)
YEL(PLG3-6)
BLK
RED(SI BOTTOM)
YEL(PLG3-7)
ORN(PLG3-13)
51C(C2-NEG)
50C(C2-POS)
52D(C1-POS)
50D(C1-NEG)
5A(SRI-POS)
5B(CRI-4)
52A(PC2-B3)
52C(CRI-6)
5B (RI)
52C (RI)
10A(PLG3-3)
48A(PLG3-5)
YEL(SPLICE)
ORN(SPLICE)
WHITE(FM)
2A(SRI-AC)
3A(SRI-AC)
4A(SRI-AC)
RED(FM)
64A(TEI-L3)
63A(TEI-L2)
62A(TEI-L1)
(T1 COIL B-2)
RED(PLG5-11)
WHITE
(PLG5-12)
52A(RI)
52B(C1-POS)
50B(C1-NEG)
50A(C2-POS)
51B(SRI-NEG)
WHITE(PLG5-8)
RED(PLG5-7)
51A(C2-NEG)
18A(S5-BOTTOM,ON)
16A(PLG1-7)
9A(PLG1-13)
17A(PLG2-1)
18A(S2-
BOTTOM,GTAW)
14A(PLG1-6)
28A(TP2)
15A(RC7-B)
20A(PLG1-10)
23A(PLG1-16)
27A(RC7-E)
11D(PLG1-5)
31A(PLG1-12)
19A(PLG1-3)
50A(PC2-B1)
50C(R3)
51C(R3)
51A(PC2-B2)
50D(R2)
50B(PC2-B4)
52B(PC2-B3)
52D(R2)
137A(PLG9-3)
136A(PLG9-8)
135A(PLG9-5)
134A(PLG9-6)
133A(PLG9-1)
11G(PLG9-9)
132A(PLG9-7)
17A(S5-WIPER)
RED(PC2-AS4)
WHT(PC2-G4)
RED(PC2-AS1)
WHT(PC2-G1)
WHT(PC2-G3)
RED(PC2-AS3)
WHT(PC2-G2)
RED(PC2-AS2)
68A(CT1)
25A(PLG10-2)
10A(CR1-A)
11C(RC7-D)
48A(CR1-B)
YEL(FAN)
YEL(SPLICE)
69A(CT1)
24A(PLG10-3)
11B(PC GND)
11F(PLG10-1)
ORN(SPLICE)
133A(PLG8-3)
137A(PLG8-7)
135A(PLG8-5)
134A(PLG8-4)
132A(PLG8-1)
136A(PLG8-6)
11G(PLG8-2)
SD-153 153-A

SECTION 7 – TUNGSTEN ELECTRODE

mod2.1 3/93

NOTE ☞

For additional information, see your distributor for a handbook on the Gas Tungsten Arc Welding (GTAW) process.

Wear clean gloves to prevent contamination of tungsten electrode.

7-1. Selecting Tungsten Electrode

Table 7-1. Tungsten Size

Electrode Diameter	Amperage Range - Gas Type♦ - Polarity			
	DC – Argon – Electrode Negative/Straight Polarity	DC – Argon – Electrode Positive/Reverse Polarity	AC – Argon – Using High Frequency	AC – Argon – Balanced Wave Using High Freq.
Pure Tungsten (Green Band)				
.010”	Up to 15	*	Up to 15	Up to 10
.020”	5-20	*	5-20	10-20
.040”	15-80	*	10-60	20-30
1/16”	70-150	10-20	50-100	30-80
3/32”	125-225	15-30	100-160	60-130
1/8”	225-360	25-40	150-210	100-180
5/32”	360-450	40-55	200-275	160-240
3/16”	450-720	55-80	250-350	190-300
1/4”	720-950	80-125	325-450	250-400
2% Thorium Alloyed Tungsten (Red Band)				
.010”	Up to 25	*	Up to 20	Up to 15
.020”	15-40	*	15-35	5-20
.040”	25-85	*	20-80	20-60
1/16”	50-160	10-20	50-150	60-120
3/32”	135-235	15-30	130-250	100-180
1/8”	250-400	25-40	225-360	160-250
5/32”	400-500	40-55	300-450	200-320
3/16”	500-750	55-80	400-500	290-390
1/4”	750-1000	80-125	600-800	340-525
Zirconium Alloyed Tungsten (Brown Band)				
.010”	*	*	Up to 20	Up to 15
.020”	*	*	15-35	5-20
.040”	*	*	20-80	20-60
1/16”	*	*	50-150	60-120
3/32”	*	*	130-250	100-180
1/8”	*	*	225-360	160-250
5/32”	*	*	300-450	200-320
3/16”	*	*	400-550	290-390
1/4”	*	*	600-800	340-525

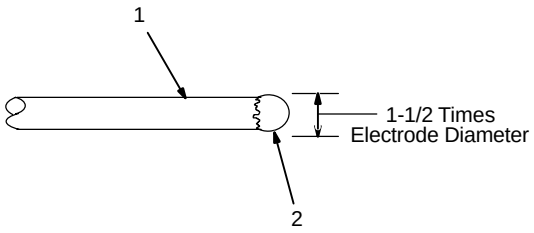
♦ Typical argon shielding gas flow rates are 15 to 35 cfh (cubic feet per hour).

*Not Recommended.

The figures listed are intended as a guide and are a composite of recommendations from American Welding Society (AWS) and electrode manufacturers.

S-0009

7-2. Preparing Tungsten



1 Tungsten Electrode

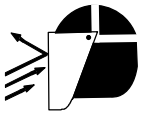
2 Balled End

Ball end of tungsten before welding by applying either an ac amperage slightly higher than what is recommended for a given electrode diameter (see Table 7-1), or a dc electrode positive amperage.

Ref. S-0161

Figure 7-1. Preparing Tungsten For AC Or DC Electrode Positive (DCEP) Welding

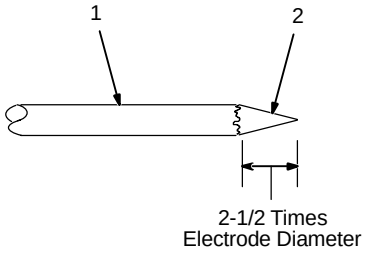
⚠ CAUTION



FLYING SPARKS AND HOT METAL can cause injury and start fires.

- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand, and body protection.
- Keep flammables away.

warn2.1 9/91

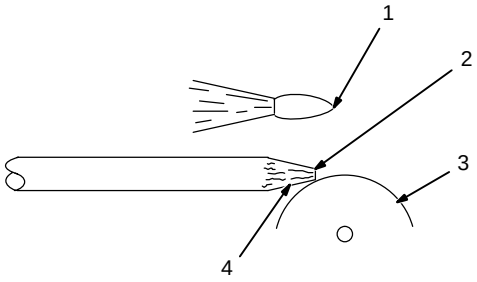


1 Tungsten Electrode

2 Tapered End

Grind end of tungsten on fine grit, hard abrasive wheel before welding. Do not use wheel for other jobs or tungsten can become contaminated causing lower weld quality.

Ref. S-0161



Ideal Tungsten Preparation – Stable Arc

1 Stable Arc

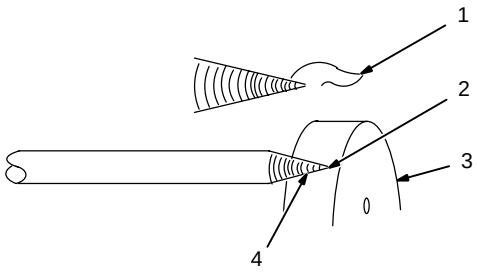
2 Flat

Diameter of this flat determines amperage capacity.

3 Grinding Wheel

4 Straight Ground

Ref. S-0162



Wrong Tungsten Preparation – Wandering Arc

1 Arc Wander

2 Point

3 Grinding Wheel

4 Radial Ground

Ref. S-0162

Figure 7-2. Preparing Tungsten For DC Electrode Negative (DCEN) Welding

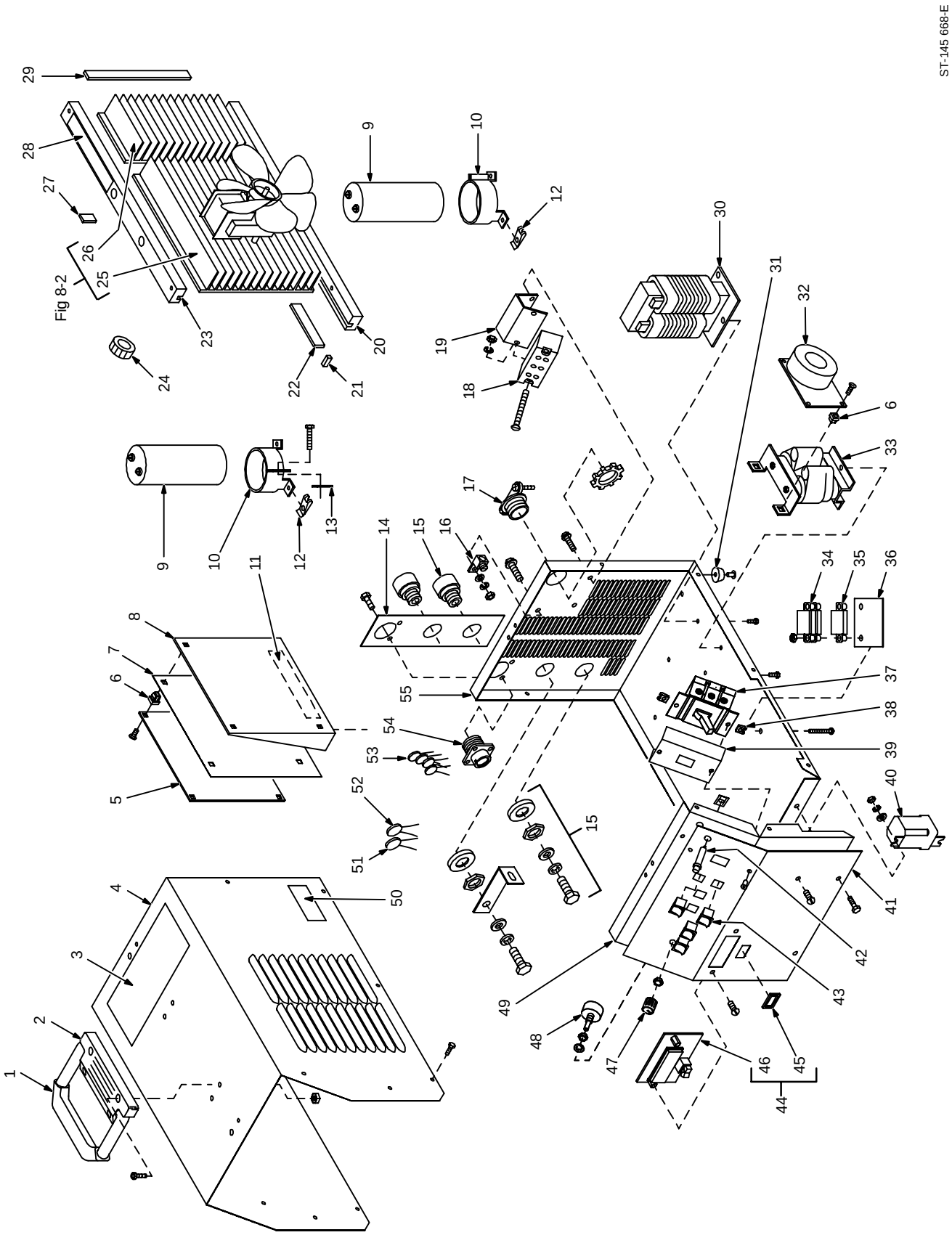


Figure 8-1. Main Assembly (175 Model Illustrated)

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 152	Quantity Model 175

Figure 8-1. Main Assembly

1		126 416	HANDLE	1	1
2		126 415	CLAMP, saddle	1	1
3		134 327	LABEL, warning general precautionary	1	1
4		+151 755	WRAPPER	1	
4		+140 620	WRAPPER		1
5	PC1	156 858	CIRCUIT CARD, control	1	1
	PLG1,2	131 052	HOUSING RECEPTACLE & SOCKETS, (consisting of)	2	2
		113 746	CONNECTOR, rect skt 24-18ga	16	16
	PLG3	131 056	HOUSING RECEPTACLE & SOCKETS, (consisting of)	1	1
		113 746	CONNECTOR, rect skt 24-18ga	14	14
	PLG5	++130 203	HOUSING PLUG & SOCKETS, (consisting of)	1	1
		113 746	CONNECTOR, rect skt 24-18ga	12	12
	PLG8	+++115 092	HOUSING PLUG & SOCKETS, (consisting of)	1	1
		113 746	CONNECTOR, rect skt 24-18ga	8	8
6		141 690	GROMMET, scr No. 8/10 panel hole .281sq .197 high	6	6
7		140 627	INSULATION, PC card	1	1
8		151 280	BRACKET, mtg PC card	1	
8		+141 520	BRACKET, mtg PC card		1
9	C1	151 281	CAPACITOR, elctlt 1600uf 400VDC	1	
9	C1,2	124 696	CAPACITOR, elctlt 1700uf 400VDC		2
10		006 426	CLAMP, capacitor 2.000dia	1	2
11		153 178	LABEL, warning exploding parts etc		1
12		136 190	NUT, speed U type 10-32	2	4
13		133 405	NUT, speed 10-24 flat type rectangular	1	2
14		130 215	PLATE, output rear panel	1	
14		140 373	PLATE, output rear panel		1
15	Neg,Pos	129 525	RECEPTACLE, twlk insul fem (Dinse type) 50/70 series	2	2
		042 418	CONNECTOR KIT, Dinse male 50 series	2	2
16		145 743	LUG, univ w/scr 600V 2-14 wire		1
17		111 443	BUSHING, strain relief .240/.510 ID x .875mtg hole	1	
		120 484	CORD SET, 250V 6-50P 12ga 3/c 8ft	1	
17		010 916	CONNECTOR, clamp cable .750		1
18	TE1	147 386	BLOCK, term 70A 3P		1
19		147 255	BRACKET, mtg terminal block		1
20		119 757	BAR, support heat sink bottom	1	1
21		126 372	STRIP, polyest gl lam .187 x .250 x .625	1	1
22		140 626	STRIP, polyest gl lam .187 x .500 x 2.250	1	1
23		+128 803	BAR, support heat sink top	1	1
24	CT1	150 925	TRANSFORMER, current	1	1
25		Fig 8-2	MODULE, power	1	1
26		Fig 8-2	MODULE, diode	1	1
27		141 515	STRIP, polyest gl lam .187 x .500 x .812	1	1
28		126 026	LABEL, warning electric shock can kill	1	1
29		119 943	STRIP, polyest gl lam .187 x .500 x 6.500	1	
29		140 380	STRIP, polyest gl lam .187 x .500 x 8.687		1
30	Z1	130 794	STABILIZER	1	
30	Z1	131 866	STABILIZER		1
31		019 663	MOUNT, nprn 15/16 OD	4	4
32	HD1	156 149	TRANSDUCER, current	1	
32	HD1	124 684	TRANSDUCER, current 300A module supply		1
	PLG10	130 204	HOUSING PLUG & SOCKETS, (consisting of)	1	1
		114 066	CONNECTOR, rect skt 20-14ga	3	3
33	T1	151 585	TRANSFORMER, pwr main	1	
33	T1	141 669	TRANSFORMER, pwr main 325		1
34	R2	139 203	RESISTOR, WW fxd 30W 8K ohm	1	
34	R2,3	139 203	RESISTOR, WW fxd 30W 8K ohm		2
35	R1	136 076	RESISTOR, WW fxd 30W 200 ohm	1	1
36		141 422	INSULATOR, flat pack	1	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 152	Quantity Model 175
Figure 8-1. Main Assembly (Continued)					
37	S1	090 328	SWITCH, tgl DPST 40A 600VAC	1	
	PLG11	115 094	HOUSING PLUG & SOCKETS, (consisting of)	1	
		113 746	CONNECTOR, rect skt 24-18ga	4	
	RC11	115 090	HOUSING PLUG & PINS, (consisting of)	1	
		114 656	CONNECTOR, rect pin 24-18ga	4	
		047 838	BLANK, snap-in nyl 1.000mtg hole	1	
37	S1	091 441	SWITCH, tgl 3PST 40A 600V		1
38		148 297	NUT, speed U type 10-32	2	2
39		146 684	INSULATOR, switch pwr		1
40	CR1	106 462	RELAY, encl 24VDC DPDT	1	1
41			NAMEPLATE, (order by model and serial number)	1	1
42	PL1	135 199	LIGHT, ind red lens 28V	1	1
43	S2-5	120 376	SWITCH, rocker SPDT 4A 250VAC	4	4
44		♦042 880	METER KIT A & V DC, (consisting of)	1	
44		♦042 613	METER KIT A & V DC, (consisting of)		1
45		133 644	FRAME, snap-in switch rocker panel mtg	1	1
46	PC3	157 587	CIRCUIT CARD, meter	1	1
	PLG9	089 222	CONNECTOR, plug 11posn	1	1
		136 339	COVER, opening meter	1	1
47		097 922	KNOB, pointer	1	1
48	R4	073 562	POTENTIOMETER, C sltd sft 1/T 2W 10K ohm	1	1
49		151 533	PANEL, front	1	
49		146 333	PANEL, front		1
50		134 756	LABEL, warning electric shock can kill		1
51	C12	135 286	CAPACITOR	1	1
52	C13	135 289	CAPACITOR	1	1
53	C14	141 524	LEAD ASSEMBLY, elect	1	1
53	C15	141 525	LEAD ASSEMBLY, elect	1	1
53	C16	141 522	LEAD ASSEMBLY, elect	1	1
53	C17	141 523	LEAD ASSEMBLY, elect	1	1
54	RC7	143 976	RECEPTACLE w/SOCKETS, (consisting of)	1	1
		079 534	CONNECTOR, circ skt push-in 14-18ga	14	14
		134 734	CONNECTOR, circ 14 pin plug Amp 213571-2		
		134 731	CONNECTOR, circ pin push-in 14-18ga Amp 213603-1		
		079 739	CONNECTOR, circ clamp str rlf .703 max cable OD Amp 206322-2 (or)		
		143 922	CONNECTOR, circ clamp str rlf .453 max cable OD Amp 206070-3		
55		151 535	CASE SECTION, bottom/rear	1	
55		140 621	CASE SECTION, bottom/rear		1
		161 098	BUS BAR, output	1	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
++Included with Interconnecting Circuit Card PC2.
+++Part of 042 880 and 042 613 Meter Kit Options.
♦OPTIONAL
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 152	Quantity Model 175
			Figure 8-2. Module, Power & Diode (Fig 8-1 Item 25 & 26)		
1	C11	093 085	CAPACITOR, polye MF .0047uf 1000V	1	1
2	VR1-3	090 304	VARISTOR, 220 joule 730VDC	3	
3		158 540	MODULE, pwr (consisting of)	1	
3		141 668	MODULE, pwr (consisting of)		1
4		156 247	BLADE, fan 6 in 4wg 30deg .252 bore CCW	1	
4		155 426	KIT, fan blade (consisting of)		1
5		134 209	NUT, speed push-on-type .250		1
6		000 366	RING, retainer E .250 shaft grv x .025thk		1
7	FM	156 246	MOTOR, fan 120/230V 2600RPM w/36V sec (consisting of)	1	
	RC6	135 409	CONNECTOR & PINS, (consisting of)	1	
		114 656	CONNECTOR, rect pin 24-18ga Molex 39-00-0040	8	
7	FM	141 518	MOTOR, fan 230/460V 2600RPM w/36V sec		1
8		146 238	BRACKET, mtg fan motor	1	1
9		+151 484	HEAT SINK, pwr module	1	
		153 178	LABEL, warning exploding parts etc	1	
9		141 423	HEAT SINK, pwr module		1
10	Q1-4	149 207	KIT, transistor mosfet	4	4
11	D5	149 215	KIT, diode fast recovery		1
12	TP2	032 810	THERMOSTAT, NC	1	1
13	SR1	149 218	KIT, rectifier integ 100A	1	
13	SR1	149 217	KIT, rectifier integ 100A		1
14	PC2	151 284	CIRCUIT CARD, interconnecting	1	
14	PC2	141 662	CIRCUIT CARD, interconnecting		1
		010 913	WASHER, flat brs .218 ID x .460 OD x .031thk	4	
		601 835	NUT, brs hex 10-32	4	

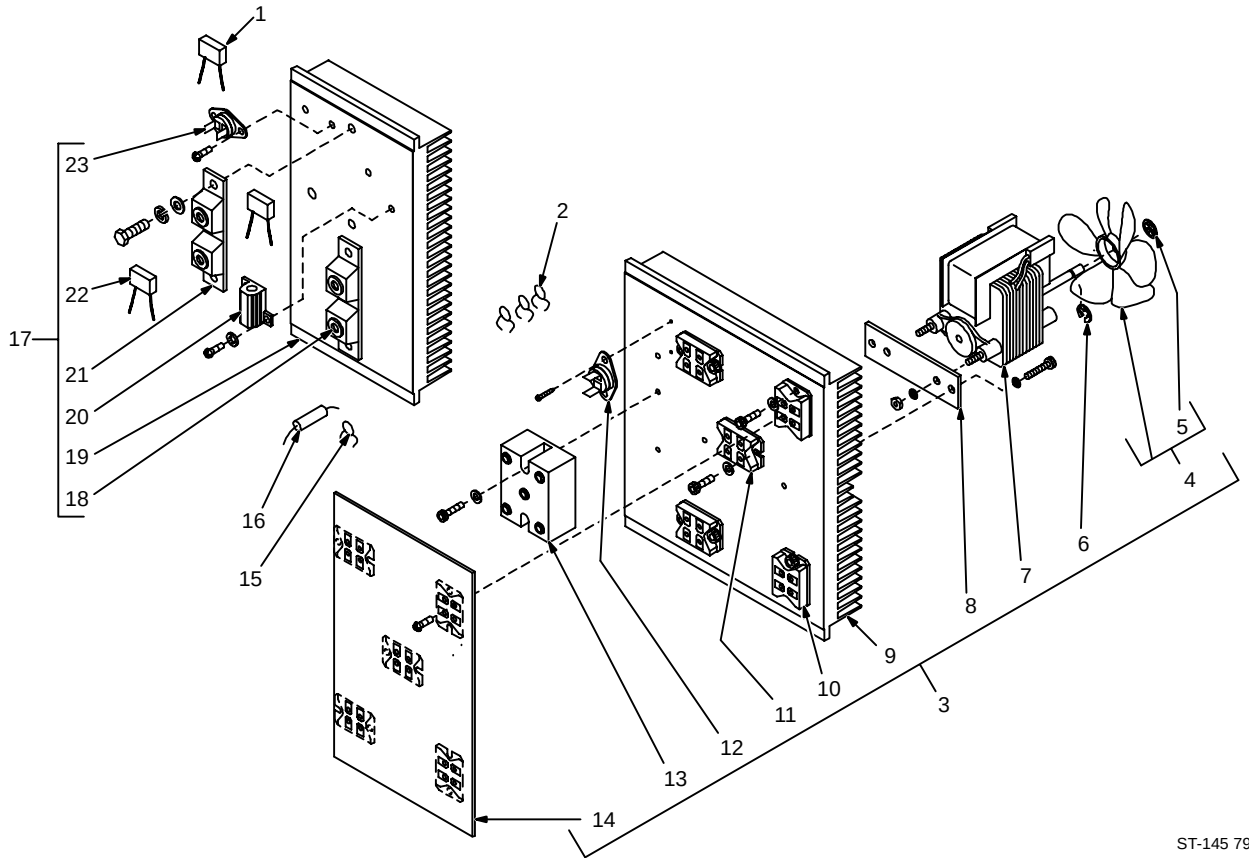


Figure 8-2. Module, Power & Diode (175 Model Illustrated)

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 152	Quantity Model 175

Figure 8-2. Module, Power & Diode (Fig 8-1 Item 25 & 26) (Continued)

	PLG6	115 092	CONNECTOR & SOCKETS, (consisting of)	1	
		113 746	CONNECTOR, rect skt 24-18 ga Molex 39-00-0038	8	
		010 193	WASHER, flat brs .218 ID x .460 OD x .031thk	4	2
		601 835	NUT, brs hex 10-32	4	2
15	VR4	004 113	VARISTOR, 40 joule 390VDC	1	1
16	R10	030 839	RESISTOR, WW fxd 5W 220 ohm	1	1
17	DM1	151 479	MODULE, diode (consisting of)	1	
17	DM1	140 492	MODULE, diode (consisting of)		1
18	D5,6	151 229	KIT, diode ultra fast recovery	1	1
19		151 470	HEAT SINK, diode module	1	
19		140 622	HEAT SINK, diode module		1
20	R9	098 324	RESISTOR, WW fxd 25W 5 ohm	1	
20	R5	098 324	RESISTOR, WW fxd 25W 5 ohm		1
21	D1,2	151 431	KIT, diode ultra fast recovery	1	1
22	C9,10	098 325	CAPACITOR, polyp film .027uf 630V	2	2
23	TP1	129 552	THERMOSTAT, NC	1	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

OPTIONS AND ACCESSORIES

BACKLIT LCD METER KIT
(#042 613 Factory**) For 175**
(#042 880 Factory**) For 152**
(#042 614 Field**) For all models**
A presettable, lighted digital display meter. Meter displays preset amperage, weld amperage, or weld voltage.

UNIVERSAL LARGE CYLINDER CART
(#042 934)
Maxstar can mount on this cart along with argon cylinder. Will accommodate 6 to 9 in. (152 to 228 mm) diameter, and 24 to 56 in. (610 to 1422 mm) high.

UNIVERSAL RUNNING GEAR/CYLINDER RACK
(#042 454)
Height: 17–1/4 in. (438 mm)
Length: 29–1/2 in. (749 mm)
Width: 14–1/4 in. (362 mm)
Accepts "R" size gas cylinders.
Shipped disassembled.

CARRYING CART
(#056 301)
Height: 34 in. (864 mm)
Width: 30 in. (762 mm)
Depth: 17 in. (432 mm)
Maxstar and Intellitig units fit nicely on this cart.

EXTENSION CORDS
For 14–Pin Remote Controls
(#122 972) 10 ft. (3 m)
(#122 973) 25 ft. (7.6 m)
(#122 974) 50 ft. (15.2 m)
(#122 975) 75 ft. (22.9 m)

RFC-14 FOOT CONTROL
(#129 339)
Heavy–duty foot current and contactor control.
20 ft. (6 m) cord and 14–pin plug.

RFC-E FOOT CONTROL
(#042 856)
Lightweight, com–pact foot control. 15 ft. (4.6 m) cord and 14–pin plug.

RCC-14 REMOTE CONTACTOR AND CURRENT CONTROL
(#151 086)
Fastens to TIG torch handle. Includes 28 ft. (8.5 m) cord and plug.

AMTV REMOTE CONTACTOR AND CURRENT CONTROL
(#152 608)
Fastens to TIG torch handle using velcro strips.

PC–300 PULSED GTAW (DC TIG) CONTROL
(#042 297)
The PC–300 provides two internally switchable scales.

An inverter power source can utilize the 0.5 to 20 pulses–per–second scale or the 10 to 300 pulses–per–second scale.

The PC–300 can be used with welding power sources with or without built–in high–frequency, or with external high–frequency units.

Front panel controls provide:
- Peak Amperage Adjustment
- Background Amperage Adjustment
- Pulses–Per–Second Adjustment
- Percent On–Time Adjustment
- Amperage Remote/Panel
- Output Contactor On/Off
- Pulser On/Off
- Power On/Off

A remote control receptacle is also included for use with a remote hand or foot control.

An 8 ft. (2.4 m) interconnecting cord and 115 VAC power cord are provided (115 VAC power is required).

MILLER EXPERT PROGRAM™
(#042 849) Maxstar 152
(#042 850) Maxstar 175
The Miller Expert Program is an easy–to–use computerized software program to systematically guide you through the repair of your equipment. Refer to Literature Index No. AV/6.0.

INTERNATIONAL-STYLE CONNECTORS

(Will accept Dinse™ or other International connectors.)

Maxstar power sources are equipped with International–style connectors for secondary connections. (Power source is shipped with two 50 mm male International–style plugs for use with #1 or #2 AWG size cable.)

INTERNATIONAL–STYLE CONNECTOR KIT
(#042 418) 50 mm
Required if male plugs shipped with power source must be replaced or if additional plugs are needed.

Kit includes one International–style male plug, which attaches to the work and/or weld cables and plugs into the International–style receptacles on the power source.

Accepts #1 or #2 AWG size cable.

EXTENSION KIT FOR INTERNATIONAL–STYLE CABLE CONNECTORS
(#042 419) 50 mm
Used to adapt or extend weld and/or work cables.

Kit includes one male International–style plug and one in–line female International–style receptacle.

Accepts #1 or #2 AWG size cable.

INTERNATIONAL/TWECO® ADAPTER
(#042 465)
A one–piece adapter which has an International–style male plug (to power source) on one end and a female Tweco receptacle (for weld cable connection) on the other end.

INTERNATIONAL/CAM–LOK ADAPTER
(#042 466)
A one–piece adapter which has an International–style male plug (to power source) on one end and a female Cam–Lok receptacle (for weld cable connection) on the other end.

OPTIONS AND ACCESSORIES

INTERNATIONAL TIG TORCH CONNECTOR KIT

(#135 492) 80 Amp Torch
(#135 493) 150 Amp Torch
(#135 494) 200 Amp Torch*
(#135 495) 250/350 Amp Water–Cooled Torch

For direct connection of one–piece torches to power sources with International–style connectors.

Note: Two–piece torches do not require this connector kit. They can use one of the two International–style connectors supplied with the power source.

May not be compatible with competitive brand torches.

TOTAL TIG INSTALLATION KIT

For Total TIG™ system, select one each of the following items:

- Welding power source
- TIGtorch (recommended torches listed below)
- TIG kit (see kits listed below)
- Remote control (optional)
- Snap Start™ (optional)

TIG TORCHES AND CONNECTING KITS

For hand–held, manual applications.
For complete information on all Miller TIG torches and accessories, see Literature Index No. TG/1.0.

Explanation of Model Description

MT = Miller torch
XX = Model number of torch
V = Gas valve in torch handle*
12 = 12–1/2 ft. (3.8 m) cable
25 = 25 ft. (7.6 m) cable
1 = One–piece, high–flex cable

80 AMP AIR–COOLED MODELS

(#116 091) MT–24–12–1
(#116 092) MT–24–25–1

Note: International Connector Kit (#135 492) must be used with the 80 Amp TIG torches listed.

KIT FOR MT–24 SERIES AIR–COOLED MODELS

(#142 413) 12–1/2 ft. (3.8 m) length
(#142 414) 25 ft. (7.6 m) length
Kit includes:

- Hose and hardware hook–up kit (THK–2)
- Consumable accessory kit (TAK–4) - three sizes (.040 in., 1/16 in., 3/32 in.) of collets, collet bodies, cups, and 2% thoriated tungsten
- Regulator/flowmeter (HRF–2425)
- Work cable with clamp (clamp rated for 350 Amps), 12–1/2 ft. (3.8 m) or 25 ft. (7.6 m) lengths to match TIG torch length

150 AMP AIR–COOLED MODELS

(#116 107) MT–17–12–1
(#116 108) MT–17–25–1
(#116 111) MT–17V–12–1*
(#116 112) MT–17V–25–1*

Note: International Connector Kit (#135 493) must be used with the 150 Amp TIG torches listed.

KIT FOR MT–17 SERIES AIR–COOLED TIG TORCH

(#129 590) 12–1/2 ft. (3.8 m) length
(#129 589) 25 ft. (7.6 m) length
Kit includes:

- Hose and hardware hook–up kit (THK–2)
- Consumable accessory kit (TAK–1) - one backcap and three sizes (.040 in., 1/16 in., 3/32 in.) of collets, collet bodies, cups, and 2% thoriated tungsten
- Regulator/flowmeter (HRF–2425)
- Work cable with clamp (clamp rated for 350 Amps), 12–1/2 ft. (3.8 m) or 25 ft. (7.6 m) lengths to match TIG torch length

200 AMP AIR–COOLED MODELS

(#116 123) MT–26–12–1
(#116 124) MT–26–25–1
(#116 127) MT–26V–12–1*
(#116 128) MT–26V–25–1*

Note: International Connector Kit (#135 494) must be used with the 200 Amp TIG torches listed.

KIT FOR MT–26 SERIES AIR–COOLED TIG TORCH

(#129 588) 12–1/2 ft. (3.8 m) length
(#129 587) 25 ft. (7.6 m) length
Kit includes:

- Hose and hardware hook–up kit (THK–2)
- Consumable accessory kit (TAK–3) - one backcap and three sizes (1/16 in., 3/32 in., 1/8 in.) of collets, collet bodies, cups, and 2% thoriated tungsten
- Regulator/flowmeter (HRF–2425)
- Work cable with clamp (clamp rated for 350 Amps), 12–1/2 ft. (3.8 m), or 25 ft. (7.6 m) lengths to match TIG torch length

Torches with manual gas valves are recommended for use with "Touch Start". When the Maxstar™ is used with an optional Snap Start™ or Intellitig™, torches with gas valves are not recommended.

Warranty Questions?

Call
1-800-4-A-MILLER
for your local
Miller distributor.

Your distributor also gives you ...

Service
You always get the fast, reliable response you need. Most replacement parts can be in your hands in 24 hours.

Support
Need fast answers to the tough welding questions? Contact your distributor. The expertise of the distributor and Miller is there to help you, every step of the way.

Miller
The Power of Blue.

TRUE BLUE® WARRANTY

Effective January 1, 2001
(Equipment with a serial number preface of "LB" or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts – 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Supplies
   * Intellitig
   * Engine Driven Welding Generators **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 1 Year — Parts and Labor
   * DS-2 Wire Feeder
   * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * Induction Heating Power Sources
   * Water Coolant Systems
   * HF Units
   * Grids
   * Maxstar 140
   * Spot Welders
   * Load Banks
   * Miller Cyclomatic Equipment
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
4. 6 Months — Batteries
5. 90 Days — Parts
   * MIG Guns/TIG Torches
   * Induction Heating Coils and Blankets
   * APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns
   * Canvas Covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear.**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

Owner's Record

Please complete and retain with your personal records.

Model Name Serial/Style Number

Purchase Date (Date which equipment was delivered to original customer.)

Distributor

Address

City

State Zip

For Service

Call 1-800-4-A-Miller or see our website at www.MillerWelds.com to locate a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables
	Options and Accessories
	Personal Safety Equipment
	Service and Repair
	Replacement Parts
	Training (Schools, Videos, Books)
	Technical Manuals (Servicing Information and Parts)
	Circuit Diagrams
	Welding Process Handbooks
Contact the Delivering Carrier for:	File a claim for loss or damage during shipment.
For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.	

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